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# SLATER'S INQUIRY
# AND
# LAURIE'S PRACTICAL
# ANALYSIS.

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# AN INQUIRY
INTO THE
# PRINCIPLES INVOLVED IN THE DECIMALIZATION
OF THE
# WEIGHTS, MEASURES AND MONIES,
OF
# THE UNITED KINGDOM:
AND INTO
# THE PRACTICABILITY AND EXPEDIENCY OF AN ALTERATION IN THEM.

LONDON
RICHARD BARRETT, PRINTER,
MARK LANE.

AN

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WEIGHTS. MEASURES & MONIES.

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THE UNITED KINGDOM;

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THE PRACTICABILITY AND EXPEDIENCY
OF AN ALTERATION IN THEM.

BY

ROBERT SLATER,

MEMBER OF THE ROYAL COMMISSION ISSUED TO INQUIRE AND ASCERTAIN HOW FAR THE MERCANTILE
LAWS IN THE DIFFERENT PARTS OF THE UNITED KINGDOM MAY BE
ADVANTAGEOUSLY ASSIMILATED.

London:
ARTHUR HALL, VIRTUE & CO., PATERNOSTER ROW.

1855.

232. h. 14.

# Dedication.

To the Right Honorable and Honorable Her Majesty's Commissioners appointed to consider how far it may be practicable and advisable to introduce the principle of Decimal Division into the Coinage of the United Kingdom.

My Lords and Gentlemen,

I beg leave most respectfully to dedicate the following Treatise to you, in the presumption that the facts, if not the suggestions, therein offered, are not unworthy of consideration in the prosecution of the object to which your labours are directed; and in the belief that it supplies that kind of practical evidence which is indispensable to the proper understanding of a question of such immense importance, not only to the community at large, but to the foreign connexions of the country.

I have the honour to be,

My Lords and Gentlemen,

Your most obedient Servant,

ROBERT SLATER.

London, (29, Milton Street,)
1st *November*, 1855.

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# PREFACE.

DURING an intimacy of many years with the late Mr. James Laurie, author of the "Interest Tables," "Universal Exchange Tables," and other decimal works, my attention was much directed to the subject of a decimal coinage, and particularly to the basis on which such a coinage, if introduced at all, ought to be established. That question was attracting considerable public interest at the time of Mr. Laurie's death in August, 1854, and a Decimal Association had been formed a short time previously, the ostensible object of which was to get the pound sterling confirmed by law as the integer of such coinage.

Few men have devoted so large a portion of their lives to arithmetical calculations as the late Mr. Laurie. There is scarcely any description of mental labour more intensely wearing to the physical energies of the individual, than unremitting application to works of that class—such works themselves are not only more costly in their production than works of general literature, but command a more limited circulation, as they are exclusively commercial, and are required only as aids in a few mercantile counting-houses. They are, consequently, never found to reward sufficiently, if at all, the author who has spent the best part of his life, at perhaps the sacrifice of his health, in their compilation. It was in circumstances such as these that Mr. Laurie sunk under the pressure of his labours, leaving behind him a numerous family, the youngest of whom only entered into the world soon after her father's decease. If ever there was a case where the Government could with propriety bestow a pension out of the sum yearly voted for the reward of literature and science, it is in the instance of this poor widow and eight children. It would besides be a graceful acknowledgment of the merits of an author of a series of most useful commercial works, of great and lasting value to the community in a commercial country like this,—particularly as he belonged to a class of authors whose claims are not often urged on Government attention.

Mr. Laurie, when on his death-bed, applied to me to aid him in bringing his last decimal calculations on the contested integer before the public, and particularly before the British Association, to whom it was dedicated, at their meeting then about to be held at Liverpool. That wish was complied with by the publication of his "Practical Analysis of the Comparative Merits of One Pound and Tenpence as the ruling Integer of a Decimal Currency for the United Kingdom."* The following treatise is to be considered as an enlargement of the views advocated in that publication. And if any profit shall arise from the sale of this additional pamphlet, it is intended to be appropriated to the benefit of Mrs. Laurie and her family.

But for the appeal made to my friendship at a trying time by a most amiable and excellent man, whose memory will ever live in my esteem, there are many reasons why I should not have obtruded myself on the notice of the public as the author of a work of this kind—not the least of which is a deeply-rooted conviction of my own inability to do adequate justice to the subject.

When men are accustomed to look at any question from a particular point of view, their convictions become rooted, and they are apt to resist opinions, or deny conclusions, which may reasonably present themselves to others by an examination of the same question in its other phases. It is, perhaps, because the mind has become prepossessed, that I indulge the preference for a *low* rather than a *high* integer for decimal coinage; not that the low unit is necessarily the best, but simply because I happen to think so. For the same reason, I am bound to support the view I take by the best arguments in my power. Of course, the converse of this proposition is likewise true; and the advocates of the pound will no doubt be equally ready to establish their case by their strongest arguments to prove the advantage of so high an integer.

It is, however, greatly to be regretted that in the discussion of a question of so much national importance, there should be displayed so sad a lack of charity. For myself, I should be willing to admit that a powerful array of the names of highly-gifted opponents, both in and out of Parliament, is somewhat discouraging, if not appalling, in any intellectual conflict; and I should be disposed to lose confidence in the correctness of my own opinions did I not know that reason is not always to be found on the side of numerical strength; and also, that many of those who approve of the principle of decimal coinage in the abstract, are not sufficiently informed on the question, nor so intimate with the practical difficulties attending its details, as to be considered *pledged* or *committed* to a high rather than to a low unit for such a purpose.

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* Published by Arthur Hall, Virtue & Co., Paternoster Row.

The importance of the question itself ought to secure a fair hearing to all who have an opinion to offer upon it; indeed, it is no great stretch of the imagination to believe that any theory which requires to be supported by ridiculing the opinions of those who may happen to be conscientiously opposed to it, must at least be a doubtful one. If it possesses any merit within itself, it can sustain no damage by being thoroughly sifted and ventilated. While even a sound and good theory may be injured by the retaliation which unseemly ridicule but too often invites in defence.

When the notorious Jack Cade was said to have declared that the *three*-hooped pot should thenceforward have *ten* hoops, and that he would make it felony to drink small beer—it was not from any particular predilection he had in favour of a *decimal* system of measurement, but from a pure and unsophisticated love of the liquor. Such an idea as *convenience* never entered into his mind—his whole soul was absorbed in the contemplation of *quantity*—the object of his adoration was, so to speak, a *large* and a *strong* unit, and it would have been high treason against his authority, for any man to be satisfied with a small and a weak one.

There are some points of analogy between this sentiment and the spirit which pervades the present controversy, as it seems to be assumed by the advocates of a high integer, that no man ought hereafter to reckon by the penny, but only by the pound. It is not that they would altogether repudiate a *small* quantity, but that people must submit to have it measured by a *large* standard. Not that anything in particular can be urged against the *penny*. It has its conveniences; but the *pound* is much more respectable—the penny is a mean, low coin; if it has no other bad qualities, *it is too small,*—too insignificant,—to be seriously entertained as a unit for any system of currency; it interferes with higher and more important considerations—is, in fact, a *three-hooped pot of miserable small beer,* and ought no longer to be tolerated.

Now, although there may be much virtue in a large measure, and little reason in finding fault with the quality of Cade's beverage, I have a strong objection to it being forced down my throat "against the stomach of my sense"—particularly when I am ready to prove, on most dyspeptic principles, that a thinner potation and a smaller quantity would better agree with my constitution. The very dread of the dose tempts me, therefore, to offer such evidence, in the hope that I and those who think with me may be spared the proposed infliction.

But there is another reason, and a powerful one. The Royal Commission recently appointed may find such evidence useful in the course of their inquiries. If it should go for nothing, the practical operation of the contemplated change will test its own value in the estimation of the public, who are most deeply interested in the question. As this test, however, must be tried during the period of transition from the old system to the new, it becomes a public duty, to investigate its value. Should it fail, it will be regarded as a public calamity, that our existing monetary system should have been disturbed for the sake of what may, perchance, be denounced as a mere *crotchet;* nor will its promoters have long to wait before public opinion is expressed on such a subject. It is every man's business, and he will not fail to approve or condemn it.

If, as is supposed, the labours of the Commissioners are to be confined to the decimalization of the coinage alone, and not to the decimalization of weights and measures, it is submitted with great deference, that in that case they are not likely to arrive at a conclusion satisfactory to the people. Were our coinage decimalized to-morrow—whether with a high or a low unit is of no consequence—it would only occasion endless confusion in the ordinary transactions of life, as all harmony would be destroyed between the measurement of commodities and the standard by which they were hereafter to be valued: and under such circumstances, it would be most desirable to enlarge the powers of the Commissioners, so as to enable them to consider the entire question.

It is in this conviction that I have ventured in the following pages, however feebly, to bring these three points — weights, measures, and coinage—forward together. In doing so, I am not actuated by any dogmatical prepossession in favour of any particular theory, but rather to invite attention to the importance of ascertaining that which is the most *practicable,* most *convenient,* and likely to be most *permanent,* as well as most useful to the community.

THE AUTHOR.

# DECIMAL WEIGHTS, MEASURES AND COINAGE.

## CHAPTER I.

**Introduction—Idea of a universal coin—Metrical system of France—Difficulties attending any attempt to assimilate weights and measures.**

Public attention has of late been directed to the importance of introducing a system of decimal coinage into this country, and various theories have been suggested as desirable for that purpose. But while differences of opinion exist as to the best system to be introduced, particularly as to the unit on which such decimal system ought to be founded, there seems to be a strong feeling on the part of many who have considered the subject, that the *principle* at least, is one which sooner or later must be conceded, particularly as it has been adopted, and is spreading in the monetary systems of other countries. There are others, however, who are disposed to deny the necessity for such a change,—and who affirm that the duodecimal, or rather mixed system, which has been in use in this country, from a period perhaps coeval with its history, is not inferior to the decimal system in use in other countries,—who would regard any disturbance of that existing system as a sort of national calamity, uncalled for by any *practical necessity*, which has arisen, or is likely to arise, in the existing state of our commercial or trading interests, with respect to its foreign relations, —and so far as its internal traffic is concerned, are almost disposed to consider such a change as altogether an unmixed evil.

The idea entertained by some persons of a *universal coin*, to be adopted by all nations, as a common measure of value, possesses many tempting considerations to a speculative mind,—perhaps the Spanish dollar has been the nearest approach to that state of monetary beatitude, which the world has as yet experienced, arising from causes unnecessary to touch upon. But we can scarcely imagine the importance of one universal coin, which would not apply with equal force to a universal weight, or a universal measure,—or the possibility, far less the probability, of accomplishing so desirable a state of things as this, unless by a convention of those nations most deeply interested in their intercourse with each other.*

It is no part of our object in this treatise to enter upon questions of that kind. Our desire is, to confine our observations chiefly to the consideration of the metrical and monetary systems in use in this country, and to inquire into the practicability of decimalising them, in such a way as shall not derange existing usages, and as may be of advantage to its external relations in commercial transactions. In passing, however, we may only say, that if one system of coinage, weights, and measures shall ever happen to be universally adopted, it can scarcely be doubted that an approved theory, once established in Europe, would present strong claims to the consideration of the world at large. And, should England and France mutually agree on such theory, it is more than probable, from their commercial importance, and the influence they unquestionably possess over other nations, that their example would be speedily followed, particularly by those countries which maintain trading relations of any consequence with them.

The metrical system of France possesses higher claims to scientific consideration than the mixed systems in use in the United Kingdom and the British Colonies. In the Empire, the "*systeme metrique,*" was founded subsequently to the first Revolution, on the measurement of a quadrant of the meridian, or the distance of the pole to the equator. In the United Kingdom, the system of measurement, which by Act of Parliament is established as the imperial standard, was handed down to us from an early period of our history, and is entitled to more respect from its traditionary character, than from any fixed or certain data which can be referred to as the basis of its foundation. Some authorities ascribe the "yard" as a measure determined during the Heptarchy; the Saxon word "*gyrd,*" or "*girth,*" or circumference of the body, being a synonymous term. It is said that Henry I., in order to prevent disputes on points of measurement, determined that the length of his own arm should thenceforward be held to be the legal standard yard—and this is understood to be the same yard of thirty-six inches in use amongst us at the present day. In remote periods, and by different nations, the height of the human body, the length of the foot, the finger, the palm, the span, and other corporal dimensions, seem to have been a popular principle of measurement. And we have ample evidence of this, in the systems established by the ancient Jews, Greeks, and Romans, as well as by other nations; but as if to show to posterity the utter futility of such a principle, it is remarkable, that none of these nations agree as to the precise dimensions of the human body, or such of its parts, as were adopted by them as the basis of their metrical systems. Nor is this to be wondered at,—such a principle could only have been conventional, and never intended for any other than the particular people who adopted it, as it is certain that the slender and stunted growth of the Asiatics, or even the Romans or Greeks of early times, as at the present day, was not likely to present much similarity in its dimensions, to the more gigantic frames of a northern people, to render it a principle calculated for universal adoption.

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* While this work is going through the press, the International Statistical Congress, assembled at the *Corps Legislaitf* in Paris (this present September, 1855), have unanimously passed a Resolution in favour of one universal weight and measure.

Whether an arc of the meridian is to be regarded as the most exact basis of a metrical system, may be fairly questioned. Scientific men doubt it; because theoretically, such measurement varies according to the parallel of latitude at which it may happen to be taken; and practically, because none of the numerous experiments have been found precisely to agree with each other. Were the unit lost therefore, there is no possibility of insuring its exact reproduction. For this reason it is evident, that the "*metre*," the unit of French measurement, can scarcely be introduced here, because the precise measurement taken at different latitudes, at different periods by different parties, cannot be exactly reconciled with each other.* If we are to look forward to uniformity at some future period, it would be better to adopt some other scientific basis rather than an arc of the meridian, and it might be worthy of the consideration of the French people, whether with that view it would not be desirable to revise the principle of their "*systeme metrique*," as amongst the different measurements they have not verified and cannot verify, the truth of any one of them. The "*metre*" however, determined on that principle as the national standard, is preserved for the benefit of reference in different parts of France, under the authority of law, in the same way as our English standard yard, for the same purpose, was preserved at the Exchequer.* It is not to be expected, that the occasion will ever arise when the French people, having lost the present dimensions of their metre, shall have occasion to make another measurement of an arc to reproduce it,—if they should, it is extremely doubtful whether they would succeed in doing so in perfect harmony with that which was adopted as the basis of their "*systeme metrique.*" Although these discrepancies exist only in a portion of the distance north of the Equator,—what might they not be on the south which has not been tested? At best, such a partial measurement can only be a very doubtful approximation to the truth. It is possible that the test of a standard founded on strictly scientific principles may (so to speak) be *too* scientific—it may be too cumbrous, too unwieldy, too costly, as well as too tedious in its process of confirmation. Considerations, such as these, are evils—a test, to be really valuable, should possess the power of reproduction promptly and inexpensively—but, above all, *precisely*. Now it is a most laborious as well as expensive process to measure an arc of the meridian; but when the expense and labour have been incurred, there seems

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* "It is a circumstance deserving of notice, that notwithstanding the parade of a "Commission and the extraordinary precaution taken to ensure accuracy in the computations, a serious error was committed with respect to this arc, which was only recently "detected by Puissant. It appears, that through inadvertence or the misapprehension "of a formula, the distance between the parallels of Mountjouy and Mola, (the station "on Fromentera,) was computed without applying the proper correction for the convergence of meridians. The distance originally given by the Commissioners was 153605·77 "toises; but the distance when the computation is correctly made is 153673·61 toises, "(Bessel. *Astronomische Nachrichten*, No. 438), the difference being 67·84 toises. In "consequence of this correction, and of the introduction of some other arcs since measured "into the data, for determining the figure of the earth, the length of the quadrant of "the meridian expressed in terms of the legal *metre*, according to the best determination "which can at present be made of the dimensions of the earth is 10,000855.76 *metres*—in "other words, the legal *metre*, would require to be lengthened by about the 00,000,856th "part of itself, in order to agree with the ideal *metre*, a ten millionth part of the quadrant of the elliptic meridian. This circumstance may serve to shew the utility of any

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"proposal to restore a lost standard from its assigned relation to the magnitude of the "earth. The French *metre*, is in fact, nothing more than an arbitrary part of the toise "of Peru, in terms of which the bases were measured, and the meridian computed."—*Penny Cyclopœdia*—Article Trigonometrical Survey.

In the letter to the Hon. Hannibal Hamlin, Chairman of the Committee of Commerce in the United States Senate, by Alexander Vattemare, member of the French Government, dated 12th December, 1853, on occasion of presenting to Congress, the three principal standards of weights and measures of France; he refers to a paper accompanying that letter, containing a historical popular description of the French Metrical Decimal System, by Mr. William W. Mann, citizen of the United States, in which the following statement appears.—(*Andrew, &c. on Commercial Papers.*) See Appendix A.

* The original standard yard is no longer producible. Both the standard yard, and the standard pound weight, were lost at the destruction by fire of the Houses of Parliament in 1834. The occasion has not as yet arisen for the public to feel the want of them. [See Professor Airy and Mr. Whitworth's opinions as to the standards.—Appendix B.]

to be no positive certainty as to the result. The section of a quadrant measured between Belgium and Spain may show a very different result from a section measured between the same degrees of latitude comprehending the high lands of Switzerland and the Tyrol; and each would be a very different thing from a section measured at the level of the sea, even supposing that the precise distance were ascertained to be the same between the Equator and its two opposite Poles, from any two different points fixed on for its measurement. The French Commissioners almost appear to have committed a grave error in adopting such a basis for measurement at all—instead of adopting a maximum to *descend downwards* to fix upon a unit, it would have been better to have fixed on a minimum and *ascended upwards* for that purpose. Nor is it likely, that we shall be reduced to the necessity of resorting to the scientific test prescribed by law, to determine the exact dimensions of the yard, should it happen to be lost to us. But we may safely predicate that the perfection to which exact science has arrived—its perpetuity by means of the press—the diffusion of knowledge, and the ever-growing intelligence of society, have rendered the integrity of both the metre, and the yard, as well as all other known weights and measures, absolutely indestructible—by human agency alone; without requiring to refer to nature as a test,—and the human mind can scarcely conceive the possibility of such a state of things to arise in any future period of our history, short of some great convulsion of nature, as that elements so important in the framework of society, shall become forgotten. In such an event, posterity may be safely left to provide for itself.

Much as it may be desired to effect a *general* metrical system, the difficulties attending an assimilation of the weights and measures of different countries, seem almost insuperable. When we consider that in the United Kingdom alone, notwithstanding the stipulations of the statute, the continuance of old systems in particular localities, still clings to the habits of the people, with most marvellous tenacity—the remarkable variety of these systems as applied to all descriptions of commodities—the difficulties to be overcome in the way of reconciling these incongruities, leaving altogether out of view, the disturbance which any alteration would occasion to the defined boundaries of landed property,—such considerations of themselves are enough to discourage, if not to deter, individuals from entering upon so hopeless a task. But what must that task be, when in addition to such difficulties at home, we should have to encounter an equal host of local observances abroad, in any attempt to reconcile and assimilate those different systems, *on one general principle.*

The great difficulty at first would be to agree upon the unit itself, whether of weight or measurement. It is not to be supposed, the French people would abandon their "*systeme metrique,*" founded on a purely scientific principle, for some other theory possessing even less pretensions to complete confirmation or reproduction, in the event of any dispute arising as to its integrity. Some principle comprehending a fixed truth of acknowledged value, equal, if not superior to their own, must first be agreed upon as worthy of general adoption, before they are likely to consent to any modification of that system, with which they are already satisfied. But in searching for such a fixed rule, it is scarcely possible to imagine an example, not open to some grave objection. The number of oscillations performed by a pendulum, in a given time, may be made available to determine its length,—other principles for the attainment of the same end, would readily present themselves as of equal value to scientific minds; but doubts and difficulties might present themselves to philosophic criticism, in the event of the standard measure being lost, as to the perfect precision of the test for determining the length of the pendulum, the action of the atmosphere, or the measurement of time itself. Even in nature, it is extremely doubtful whether, with all the lights of science at present known to us, we can obtain anything like a perfect *fixity* to determine an exact unit of space, without the possibility of some question arising to upset it—it would always be asked, *What is a perfect unit of space at all times and in all places capable of perpetual demonstration and reproduction?*—And, it almost seems as if there could scarcely be a complete answer to that question without the possibility of some cavil or dispute.

The *principle* of the pendulum is adopted by the Act of 1823, as the *test* for establishing the integrity of the English yard of 36 inches—the length defined by the action of the seconds pendulum is available only as a *proportional* test of measurement, namely, as $39.\frac{1393}{10000}$ inches are to 36 inches. In France, the metre of $39.\frac{3708}{10000}$ English inches, is the unit of measurement, and professes to be the ten-millionth part of the distance from the pole to the equator. Although the principle of determining the basis of measurement varies, there is so near an approximation between the length of a seconds pendulum in a given latitude, as prescribed by the English statute and the French system, that it is to be regretted one fixed rule had not applied to both. At present, were the question raised as to the expediency of assimilating the metrical systems of France and England, the point for consideration would simply be—whether the unit of measurement should be the *whole* of the distance founded on the quadrant of the meridian, or the length of the seconds pendulum,—*or a part in proportion to the whole.* With all possible respect to the scientific authorities in France and England, who established these different principles of measurement, it may be fairly questioned, whether either of them is the best which could be chosen for that purpose; but it may be safely left to the scientific men of both countries, with the concurrence of their respective governments, to adjust the settlement of a question of so much importance. It is no part of the object of this inquiry to express any opinion on that point. At present, we are disposed to take the English system as we find it; to inquire how far it may be capable of improvement by simplification—and whether, with that view, it may not be possible to unite with such improvement, a principle of decimal division, so as to harmonize *quantities* with *prices,* in the event of a decimal system of coinage being introduced into this country.

## CHAPTER II.

**Standard Weights and Measures—Troy and Avoirdupois—Suggestions as to decimal division—Incongruity of present system and denomination of weights—Decimal comparison of Troy and Avoirdupois.**

ACCORDING to the new or Imperial standard, legalized by statute, and introduced January 1, 1826, there are the following in common use throughout the United Kingdom, viz:—the *Imperial Troy* weight—the *Apothecaries* weight—the *Diamond* weight—the *Avoirdupois* weight—the *Cheese and Butter* weight—and the *Wool* weight—the Imperial *Long* measure—the *Superficial* measure—the *Cubic or Solid* measure—the *Liquid and Dry* measure. All these measures are independent of the old local customs, almost too numerous to specify—which, although superseded by the Imperial Standards, are still in use in different parts of the country, in despite of the statute, and will continue to be in use, notwithstanding their incorrect as well as inconvenient character; until a system of greater simplicity, and one more readily applicable to the coins in circulation shall be introduced, so as to be easily understood and adopted by the people.

*Troy* weight is understood to be the oldest known weight in the country, but, from its minute subdivisions, is more particularly applicable to the weighing of precious metals, and other articles of small size and of large value, as in the case of apothecaries' medicines. Public necessity seemed to require a different weight than Troy for grosser commodities; and hence, by vulgar consent, came the introduction of Avoirdupois. We cannot otherwise conceive why so popular a weight as Avoirdupois should have been introduced at all; which, although it was not legalized earlier than Henry VIII., in 1522, must have been in common use long before that period. The disparity between the weights is most striking; Avoirdupois being to Troy as 7000 is to 5760, or as 28 is to 23, nearly. Such a weight could only have become legalized at an advanced stage of society, and must have sprung from recognized custom alone; otherwise it is not to be believed, the force of law would have been accorded to it; since it is evident, that if either of these systems had descended low enough, or ascended high enough in the scale, the people would have been satisfied with one system of weight, and rendered it capable of determining the most minute, as well as the grossest quantity of any commodity, without requiring two systems for that purpose.

The inconvenience, however, arising from the discrepancies existing between Troy and Avoirdupois weights is by no means confined to these alone; there were, and still are, numerous systems in common use, which it is to be regretted the Commissioners appointed to inquire into the existing weights and measures had not found some means of reconciling. The multiples of a pound, whether described in quarters, hundredweights, or tons, applicable to the great mass of commodities; in stones, seams, or trusses, as applied to hay and straw; in cloves, weys, or firkins, as applied to cheese and butter; or cloves, stones, tods, weys, sacks, or lasts, as applied to wool—always represent a definite quantity, clearly enough understood in the branch of trade identified with these particular commodities, although they produce confusion by their diversity; but it is lamentable, that when an imperial standard was to be determined by Act of Parliament, sufficient attention was not directed to these diversities, and that some more simple division of weights had not been recommended by the Commissioners, which would have rendered so many distinctions unnecessary, more especially as in the instance of ounces, pounds, cloves, weys, stones, and others, *the same denominations actually represent different weights for different commodities.*

The Commissioners in their report, which led to the enactment of the statute 5 Geo. IV., cap. 74, were of opinion that the Troy weight ought to be preserved not only from its antiquity, but (as Mr. Davies Gilbert stated), "because all the coinage had been "regulated by it, and all medical prescriptions or formulæ now are, "and always have been estimated by Troy weight, under a peculiar "subdivision which the College of Physicians have expressed them- "selves most anxious to preserve." And he adds, "The Avoirdupois "weight seems not to have been preserved with such scrupu- "lous accuracy as Troy weight, by which more precious articles "have been weighed; but we had reason to believe that the pound "cannot differ by more than 1, 2, or 3 grains, from 7000 grains "Troy; some being in excess, and others, although in a less degree, "in defect, but in no case amounting to above 1, 2, or 3 grains. "It, therefore, occurred to us, that we should be offering no "violence to this system of weights, if we declared that 7000 "grains Troy should be hereafter considered as the pound Avoir- "dupois." In accordance with those views, it was enacted, "That “after the 1st day of May, 1825, the standard brass weight of one pound Troy weight made in the year 1758, now in the custody of the Clerk of the House of Commons, shall be, and is hereby declared to be the original and genuine standard of weight, and that such brass weight shall be and is hereby denominated the Imperial Standard Troy pound, and shall be, and the same is hereby declared to be, *the unit or only standard measure of weight from which all other weights shall be derived, computed, and ascertained;* and that $\frac{1}{12}$th part of the said Troy pound shall be an ounce, and that $\frac{1}{20}$th part of such ounce shall be a pennyweight, and that $\frac{1}{24}$th part of such pennyweight shall be a grain, so that 5760 such grains shall be a Troy pound, and that 7000 such grains shall be, and they are hereby declared to be a pound Avoirdupois, and that $\frac{1}{16}$th part of the said pound Avoirdupois shall be an ounce Avoirdupois, and that $\frac{1}{16}$th part of such ounce shall be a dram.”

Troy weight being, therefore, declared by law to be the basis of Avoirdupois weight (the pound Avoirdupois being determined at 7000 Troy grains), it is our purpose in this inquiry, to reconcile as far as possible the existing incongruities in these separate systems. We regard that basis with the more favour, as it seems to afford data for assuming a decimal division of weights,—the great object we have in view, with reference to the probability of a decimal system of coinage being introduced at no distant period. And, there is besides, another most important consideration for following up this theory, namely,—the scientific rule, which has determined that *the specific gravity of a cubic foot of distilled water, at the temperature of 62° of Fahrenheit's thermometer, is equal to* .1000 *ounces of Avoirdupois.* This supplies another established basis for a decimal division, both as regards measures and weights. And it is submitted, that this rule furnishes a test capable of demonstration and reproduction, at any time and in any country, fully equal, if not superior, to the results of the pendulum taken at any given geographical point, or the measurement of an arc of the quadrant of the meridian.—(See Appendix C.)

At the very threshold of this inquiry, namely, the practicability of introducing *one* system of weights in place of the different systems at present in use, there are many difficulties attending such an attempt. In looking more particularly at the two leading systems in use in the United Kingdom, (Troy and Avoirdupois), this is most especially the case, as although the pound Avoirdupois is now declared by the statute to contain

7000 *Troy* grains; (the Avoirdupois ounce, generally considered as the Roman *uncia*, containing $437\frac{1}{2}$ grains Troy;) it nominally contains, or rather *did* contain, no less than 7680 *Avoirdupois* grains, and the grain Troy was consequently equal to 1.097 grains Avoirdupois—that is to say,—that as the ounce in each system contained 480 grains, the disparity in the aggregate number of grains was reconciled by the pound Troy being divided into twelve ounces, while the pound Avoirdupois contained sixteen ounces.

The *Pathway to Knowledge*, a translation from the Dutch, published in 1596, says,—" The pound *haberdepois* is parted into " sixteen ounces, every ounce eight draghmes—every draghm three " scruples, — every scruple twenty grains;" giving 7680 grains to the pound. This division is the same as the apothecaries weight of the present day. Sir Jonas Moore in his Arithmetic, first published in 1660. Jaéke in 1674, and Harris, as late as 1716, all agree as to the same division and the same pound of 7680 grains,—there was however, no positive agreement as to the exact ponderosity of the Avoirdupois pound, some giving $6994\frac{2}{7}$, others 7008 Troy grains, and others between these extremes: and hence the decision of the Commissioners recommending the fixed number of 7000 grains.

By statute of Henry III., (anno. 1260), we find that "thirty-" two grains taken from the middle of the ear and well dried," are declared to weigh one pennyweight, that twenty such pennyweights should be *one ounce*, twelve of which should make one pound *Troy weight*. At that period therefore, Troy weight must have contained 7680 grains, and must have been used for common commodities, as the Saxon or Tower pound, was used at the Mint from the Conquest down to 1527 (Henry VIII.), when the Troy pound was substituted in its stead. The Tower pound contained only eleven ounces five pennyweights Troy, so that at the date of the above-named statute, and down to the 28th of Edward I., a pound weight of silver was coined into twenty shillings, and the silver penny was the 240th part of such pound. (See McCulloch's *Dictionary of Commerce*—Article Coins); the Troy ounce, therefore, must have contained 640 grains; but the subsequent reduction of the number of grains in the pennyweight from thirty-two to twenty-four, seems to have been dictated by a desire to harmonise the weights with the coinage, and the twenty-four grains thus adopted, must have been a conventional arrangement, considered desirable to be introduced as a matter of convenience. Cocker, Wingate, and others, adopt this view in their definition of the pennyweight, as they state, that it contains thirty-two *real* grains, and twenty-four *artificial* grains. The grain Troy, therefore, is no longer the grain *par excellence, taken from the middle of the ear,*—while the grain Avoirdupois, may be regarded as a mere hypothesis, which has ceased to have any tangible existence.*

Leaving, however, the distinction between Avoirdupois and Troy grains, as a settled point, which does not require to be considered in this inquiry, it is certain that were it attempted to decimalize Avoirdupois weight by means of the Troy grains fixed by law; this could not be accomplished on a satisfactory basis, as an host of interminable fractions would present itself as an insuperable obstacle to such an arrangement—thus:

7000 grains troy = 1 lb. avoirdupois.
1000 ditto = $2\frac{285}{1000}$ ounces ditto.
$437\frac{1}{2}$ ditto = 1 ounce ditto.
100 ditto = $3\frac{657}{1000}$ drams ditto.
10 ditto = $\frac{365}{1000}$ ditto ditto.

But if the pound Avoirdupois (containing 7000 Troy grains) is subdivided into *one thousand parts,* the result will appear thus—

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* As it happens, however, the *actual* number of Troy grains, compared with the conventional number 7680,—is of no importance at the present day, because the grain Avoirdupois, if it were really ever used at all, has become obsolete—the pound Avoirdupois being now determined by law, at 7000 Troy grains; but were the 7680 Avoirdupois grains held to be an acknowledged quantity, and the ponderosity of the grains the same, which would involve a corresponding alteration in the proportional weight of the pound, it would be attended with this advantage—that by raising the grain Avoirdupois by $\frac{3}{1000}$ parts (an almost imperceptible fraction,) the difference between Troy and Avoirdupois would become actually *ten per cent.*, an easy means of transition from one to the other, in which case they would stand as under; so that to convert the one weight into the other, it would only be necessary to add $\frac{1}{10}$th to Troy, or deduct $\frac{1}{11}$th from Avoirdupois :—

| | | Troy. | Avoir. |
|---|---|---|---|
| 1 Grain ........................ | = | 1. | 1.1 |
| 1 Pennyweight (Troy) ...... | = | 24. | 26.400 |
| 1 Dram—Avoirdupois ...... | = | 27.34375 | 30.078125 |
| 1 Ounce—do.................. | = | 437.557 | 481.3127 |
| 1 Do.—Troy .................. | = | 480. | 528. |
| 1 Pound—do. .............. | = | 5760. | 6336. |
| 1 Ditto—Avoirdupois ...... | = | 7000. | 7700. |

But the coincidence, would not end here,—it would be attended with the additional advantage of decimally assimilating the weights of France to the newly arranged Avoirdupois weight of England, inasmuch as the *gramme,* the unit of weight in France, being equivalent to $15.\frac{4340}{10000}$ grains, would be nearly $\frac{1}{500}$th part, exactly $498\frac{828}{1000}$ of 1lb. Avoirdupois, if such pound contained as before 7680 (modified to 7700) grains, sufficiently near for all purposes of assimilation.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 lb. | = | 16 oz. | = | 1000 | parts | = | 7000 | grains. |
| $\frac{1}{2}$ „ | = | 8 „ | = | 500 | „ | = | 3500 | „ |
| $\frac{1}{4}$ „ | = | 4 „ | = | 250 | „ | = | 1750 | „ |
| $\frac{1}{8}$ „ | = | 2 „ | = | 125 | „ | = | 875 | „ |
| $\frac{1}{16}$ „ | = | 1 „ | = | 62.5 | „ | = | 437.5 | „ |
| $\frac{1}{32}$ „ | = | $\frac{1}{2}$ „ | = | 31.25 | „ | = | 218.75 | „ |
| $\frac{1}{64}$ „ | = | $\frac{1}{4}$ „ | = | 15.625 | „ | = | 109.375 | „ |
| $\frac{1}{128}$ „ | = | $\frac{1}{8}$ „ | = | 7.8125 | „ | = | 54.6875 | „ |
| $\frac{1}{256}$ „ | = | $\frac{1}{16}$ „ | = | 3.90625 | „ | = | 27.34375 | „ |

Avoirdupois being the weight by which the great bulk of commodities is distributed amongst the people,* and as the quantities sold, in very few instances, compared with the whole, descend lower than the ounce, it would seem that the subdivision of the pound could be so arranged as to easily harmonise with a decimal coinage, particularly if such a currency were established on the integer of 10*d.*, as every cent advance upon an ounce would be equal to 16 cents, or 1 penny 6 cents, per pound, a mode of computation with which the poorer classes would speedily become familiar; but were the weights themselves adjusted to a decimal subdivision, for quantities lower than the pound avoirdupois, it is probable that the following proportions would speedily supersede the uncial division at present in use,—as the greater convenience of assimilating prices to weights would be instantly acknowledged by all as a great improvement on our present system, viz. :—

| | | | | |
|---|---|---|---|---|
| A weight | representing | 1lb. or | 1.000 | parts |
| „ | „ | $\frac{3}{4}$ths . . . . | .750 | „ |
| „ | „ | $\frac{1}{2}$ . . . . . . | .500 | „ |
| „ | „ | $\frac{2}{5}$ . . . . . . | .400 | „ |
| „ | „ | . . . . . . . . | .300 | „ |
| „ | „ | . . . . . . . . | .200 | „ |
| „ | „ | $\frac{1}{10}$th . . . . | .100 | „ |
| „ | „ | . . . . . . . . | .050 | „ |
| „ | „ | . . . . . . . . | .040 | „ |
| „ | „ | . . . . . . . . | .030 | „ |
| „ | „ | . . . . . . . . | .020 | „ |
| „ | „ | $\frac{1}{100}$th. . . | .010 | „ |
| „ | „ | . . . . . . . . | .005 | „ |
| „ | „ | . . . . . . . . | .002$\frac{1}{2}$ | „ |

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* Avoirdupois appears to have varied in ponderosity at different periods of our history. It is defined by Wingate (quoting Gerard Malynes, whose *Lex Mercatoria* was published in 1636), as serving to weigh "all kind of grocery ware, as also butter, cheese, flesh,

This subdivision of the pound Avoirdupois is capable of supplying even smaller quantities than the Imperial Standard weight can at present furnish; inasmuch, as the weight represented by 2½ parts, is equal to the 400th part of one pound, while the dram (the 16th of one ounce) is equivalent to the 256th part of one pound only.

In its ascending relations, Avoirdupois weight is as under:—

| Ton | Cwt. | Qr. | lb. |
|---|---|---|---|
| 0 | 0 | 0 | 1 |
| 0 | 0 | 1 = | 28 |
| 0 | 1 = | 4 = | 112 |
| 1 = | 20= | 80= | 2240 |

Looking at these multiples, it is difficult to conceive what could have been the motive or reason for fixing on a system of weights of such singular proportions, or what could have led our forefathers to have fixed on *seven* as a ruling number. The Saxons are said to have used *a stone,* to which they attached the weight of 7lbs., which, from its name, may have been the origin of the conventional weight for *gross* commodities, and have been doubled upwards (as 14lbs. 1 stone; 28lbs. 1 quarter; 56lbs. 2 quarters, or ½ cwt.; and 112lbs. 1 cwt.), until it reached the highest term—or it may have originated from the practice, which is not uncommon even at the present day, of *giving in* an additional article, where one dozen of such articles, had been purchased (as in the instance of the baker's dozen of 13 loaves); and, in this way, a dozen may have been thrown in where 100 articles had been bought; thus determining, by usage, the gross quantity of 112 to be held as 100; such higher number, in a descending ratio, supplying the natural subdivisions which exist in Avoirdupois weight. Some such conventional arrangement is by no means unlikely, in the case of weights applicable to common commodities of *small value,* rather than in the instance of Troy weight, which was used for precious metals and articles of *high value,* where the greatest precision was required. All this is however conjectural, and although an interesting subject of inquiry for the antiquary, is of little importance to society at the present day, compared with the advantages to be derived from a decimal division of weights concurrently with a system of Decimal Coinage, if established; as it is believed by many, that such an arrangement would not only introduce greater simplicity into the transactions between individuals, as well as less labour in calcu-

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"tallow, wax, and every other thing which beareth the name of *garbal,* and whereof "issueth a refuse or waste."

lation, but would secure a system more likely from these qualities to remain permanently in use than that mixed system at present legalized by statute, and which has undergone many changes since its first introduction. By decimalising the pound Avoirdupois in its ascending relations, the *hundred weight* would, with far greater propriety, be represented by 100 than by 112: and the ton might be determined at either 20 or 25 of such hundreds, as may seem best; while the existing minor subdivisions of quarters and stones would speedily be superseded by *tenths* of the hundred, when the convenience of harmonizing decimal quantities to a Decimal Coinage, would become understood.*

There seems no good reason for perpetuating the distinctions in the existing weights for grosser commodities still recognized by law. We cannot see the expediency, far less the necessity of using a stone of 14lbs for one class of articles; while, for butcher's meat and fish, a stone consists of 8lbs. only—why a stone of glass should be 5lbs., or a seam of glass be 24 stones, or 120lbs—why hay should be sold by the truss, weighing 56lbs., and straw by the truss, weighing 36lbs.—or why a truss of new hay should be fixed at 60lbs, *until the* 1*st of September*—why cheese and butter should be sold by the *Clove* of 8lbs.—or why the *Wey* should be 32 cloves in Essex, and 42lbs. in Suffolk. It would be a great improvement to have one fixed weight for each subdivision of the 100lbs., *applicable to all commodities,* leaving it with the people to adjust the price according to their own estimate of the quality or value of the article. By such simple rule, every commodity being subject to one law of weight, would speedily adjust itself to that other law, which no system of legislation can regulate—namely, the natural value of a given quantity, governed by the supply and demand for it.

The importance of Troy grains being adopted as the basis of all other weights, as well as being the weight by which the coinage has been governed for many centuries, forbids us to make any suggestion with he view to an alteration in that system, but it might not be unprofitable to contrast the decimal proportions of Troy and Avoirdupois,—first, according to their nominal subdivisions, and next as to their comparative ponderosity:—

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* "A meeting of the Coal Dealers was recently held in Philadelphia, to take into con- " sideration the propriety of changing the weight of a ton of coal from 2240 pounds to " 2000 pounds. Mr. David E. Hance was called to the chair, and John J. Hasler ap- " pointed Secretary. A document was read signed by 90 dealers, recommending the " change in the weight of a ton. A resolution was adopted that the uniform weight of " a ton of coal, to be given to the retail sale of coal, shall be 2000 pounds, on and after the " 1st of December. The meeting, which was attended by twenty-three dealers, was unani- " mously in favour of the reduction of 240lbs., and settled the question of the proper " weight of a ton of coal. The dealers are allowed at the mines 2240 pounds to the ton, " with an addition of 5 per cent for loss."—*(Hunt's Merchant's Magazine for Jan.* 1854, p. 117.*)*

| AVOIRDUPOIS. | | | TROY. | | |
|---|---|---|---|---|---|
| lb. oz. drams | Decimal Parts of 1 lb. | Grains. | lb. oz. dwts. | Decimal Parts of 1 lb. | Grains. |
| 1=16=256 | 1. | 7000. | 1=12 =240 | 1. | 5760. |
| ¾=12=192 | .75 | 5250. | ¾= 9 =180 | .75 | 4320. |
| ½= 8=128 | .50 | 3500. | ½= 6 =120 | .50 | 2880. |
| ¼= 4= 64 | .25 | 1750. | ¼= 3 = 60 | .25 | 1440. |
| ⅛= 2= 32 | .125 | 875. | ⅛= 1½= 30 | .125 | 720. |
| $\frac{1}{16}$= 1= 16 | .0625 | 437.5 | $\frac{1}{12}$= 1 = 20 | .083. | 480. |
| ½= 8 | .03125 | 218.75 | ½= 10 | .0416. | 240. |
| ¼= 4 | .015625 | 109.375 | ¼= 5 | .02083. | 120. |
| ⅛= 2 | .0078125 | 54.6875 | ⅛= 2½ | .010416. | 60. |
| $\frac{1}{16}$= 1 | .00392025 | 27 34375 | $\frac{1}{16}$= 1¼ | .0052083 | 30. |
| | | | $\frac{1}{20}$= 1 | .00416 | 24. |
| | | | ½ | .002083. | 12. |
| | | | ¼ | .0010416. | 6. |
| | | | ⅛ | .00052083 | 3. |
| | | | $\frac{1}{12}$ | .0003472 . | 2. |
| | | | $\frac{1}{16}$ | .000260416 | 1.5 |
| | | | $\frac{1}{24}$ | .00017361 | 1. |

DECIMAL PROPORTIONS OF TROY AND AVOIRDUPOIS, MEASURED BY TROY GRAINS.

| Decimal Division of 1 lb. | Troy. | Avoirdupois. |
|---|---|---|
| .0001 | .576 | .7 |
| .0002 | 1.152 | 1.4 |
| .0003 | 1.728 | 2.1 |
| .0004 | 2.304 | 2.8 |
| .0005 | 2.88 | 3.5 |
| .0010 | 5.76 | 7. |
| .0020 | 11.52 | 14. |
| .0030 | 17.28 | 21. |
| .0040 | 23.04 | 28. |
| .0050 | 28.8 | 35. |
| .0100 | 57.6 | 70. |
| .0200 | 115.2 | 140. |
| .0300 | 172.8 | 210. |
| .0400 | 230.4 | 280. |
| .0500 | 288. | 350. |
| .1000 | 576. | 700. |
| .2000 | 1152. | 1400. |
| .3000 | 1728. | 2100. |
| .4000 | 2304. | 2800. |
| .5000 | 2880. | 3500. |
| 1.0000 | 5760. | 7000. |

Comparative Ponderosity of the Pound and Ounce Troy and Avoirdupois—175 lbs. Troy being equal to 144 lbs. Avoirdupois, and 175 oz. Troy to 192 oz. Avoirdupois.

| Troy lb. | Avoirdupois Pound. | Troy Ounce. | Avoirdupois Ounce. |
|---|---|---|---|
| .1 | .082285 | .1 | .109714 |
| .2 | .164571 | .2 | .219428 |
| .3 | .246857 | .3 | .329142 |
| .4 | .329142 | .4 | .438857 |
| .5 | .411428 | .5 | .548571 |
| .6 | .493714 | .6 | .658285 |
| .7 | .575999 | .7 | .767999 |
| .8 | .658285 | .8 | .877714 |
| .9 | .740571 | .9 | .987428 |
| 1.0 | .822857 | 1.0 | 1.097142 |

The other systems in use may be merely referred to,—if any decimalization were to take place in either Troy or Avoirdupois, these other systems would properly have to be comprehended in such arrangement,—*Apothecaries' weight* being merely a modification of Troy weight, while *wool weight* is a modification of Avoirdupois. Much as we should be disposed to respect the *"scruples"* of the College of Physicians, we do not know that medical prescriptions would be less efficacious were that learned body to determine on abandoning their present hieroglyphic system altogether in specifying minute quantities, or be less liable to misapprehension and mistake (which in such cases may be a fatal error) by a simpler and less obscure rule, for the guidance of the apothecary who has to prepare them.

Were the decimal division applied to our systems of weights, it would be no difficult matter to determine on certain pieces or masses of metal to represent a certain quantity of grains or decimal proportions of the pound. If it is necessary that apothecaries' weight should still be preserved intact, this can be accomplished by the weights representing grains, 20 of which are equal to one scruple.

## CHAPTER III.

Reasons for preserving Avoirdupois pound—Distilled water a test of both weight and length — Decimal comparison of yard, foot, and inch — Other points of Long measure.

THERE are most important reasons for preserving the pound Avoirdupois in its integrity, independently of its traditional and popular character as a measure of weight, although it might with advantage be subdivided into 1000 parts, each representing 7 grains Troy ($\frac{1}{10}$th part of the pound, being equal to $1\frac{6}{10}$ths of the present ounce). We have already adverted to the circumstance, of a cubic foot of distilled water, being equal to 1000 ounces Avoirdupois, and being the law for determining the specific gravity of all commodities, whether solids, liquids or gases. But in addition to this scientific maxim, the law declares, that 10 lbs. Avoirdupois shall be the standard of one *gallon* of distilled water, " weighed in air at the temperature of 62° of " Fahrenheit's thermometer, the barometer being 30 inches." The Avoirdupois pound, therefore, becomes the index of capacity and extension as well as of weight, and is an element of great importance in the consideration of the other points of this inquiry,—while in their turn, these other points furnish a test of the correctness of the Avoirdupois pound itself, irrespective of the 7000 Troy grains which the law has prescribed as its measure of ponderosity.

A cubic foot weighing 1000 ounces Avoirdupois, may be considered as formed of 1000 cubes, each weighing one ounce, and 100 of such cubes ranged in rows or lines of 10 cubes each, will form each of the sides of such cubic foot. The comparison, therefore, between measurement and weight will stand thus—

10 ounces or cubes = 1 foot lineal measure in length.
100 ounces or cubes = 1 square foot on surface.
1000 ounces or cubes = 1 cubic or solid foot.

We shall afterwards consider the expediency of subdividing the lineal foot into 10 parts instead of 12 inches, as such an arrangement would at once effect an assimilation between weights and measures (a most desirable consideration),—at present, however, it will be seen that if the pound Avoirdupois were adopted as the unit of a system of decimal weights, the ounce cannot be a decimal part of the pound, although it may be preserved as a sub-multiple, each ounce being equal to .0625 of one pound. The integrity of the pound, however, as well as of the foot, and, consequently, of all other measures of which the foot forms a component part, can always be tested by this law, or by a modification of its terms—viz., that every cubic foot of distilled water at the stated temperature, is equal in weight to 62½ pounds Avoirdupois; and that, consequently, even were the ounce forgotten as the 16th of one pound, this rule would be equally efficacious as a test of both weight and measure. But the rule prescribed by the statute has only to be extended to render it applicable to lineal measurement as well as to weight and capacity; for it is only necessary to ascertain the cube of 1 gallon of distilled water at the temperature of 62°, which is equal to 10lbs. Avoirdupois, to determine its lineal proportions, and by that means we shall arrive at a test by which the pound itself can always be established.

The statute enacts, that "the straight line or distance between " the centres of two points in the gold studs in the straight brass " rod, now in the custody of the Clerk of the House of Com- " mons, whereon the words and figures '*Standard Yard*, 1760,' " are engraved, shall be the original and genuine standard of that " measure of length or lineal extension called a yard, &c., &c., it " shall be and is hereby denominated, the *Imperial Standard* " *Yard*, &c. one-third part shall be a foot, and the twelfth part of " such foot, shall be an inch—the pole or perch in length, shall " contain five and a half such yards—the furlong 220 such yards— " and the mile 1760 such yards."

From the importance of the yard in our system of lineal measures, as well as in measures of surface and capacity, not only from its traditionary character, but from its general application in the multifarious concerns of business and labour, it is not to be supposed that in any theory of decimal division which may be proposed applicable to measurement, the imperial standard yard ought not to become a *multiple*, at least, if not the unit or integer of such decimal division. But if we bring its decimal capabilities to the test of Arithmetic, it would not seem to possess those qualities which would even admit, far less, recommend it as a decimal integer, however easily it may become a multiple of another unit. We can see no particular advantage in substituting the cubic yard containing 27,000 ounces Avoirdupois for the cubic foot already suggested, as it admits of no improvement by being adopted as the basis of a decimal arrangement—but comparing the decimal divisions of a lineal yard, with its component parts of feet and inches, the result is as under:—

| Yards. | | Feet. | | Inches. |
|---|---|---|---|---|
| .001 | = | .003 | = | .036 |
| .01 | = | .03 | = | .36 |
| .1 | = | .3 | = | 3.6 |
| 1 | = | 3. | = | 36. |
| 10 | = | 30. | = | 360. |
| 100 | = | 300. | = | 3600. |
| 1000 | = | 3000. | = | 36000. |
| 10,000 | = | 30000. | = | 360000. |

If we apply these decimals to the popular divisions of a yard, we find,—

| Yard. | | | | Feet. | | Inches. |
|---|---|---|---|---|---|---|
| 1 | ,, | = | 1.00 | 3. | = | 36. |
| ¾th | ,, | = | .75 | 2.25 | = | 27. |
| ½ | ,, | = | .50 | 1.50 | = | 18. |
| ¼th | ,, | = | .25 | .75 | = | 9. |
| ⅛th | ,, | = | .125 | .375 | = | 4.5 |
| $\frac{1}{16}$th | ,, | = | .0625 | .1875 | = | 2.25 |

The multiples or ascending decimals would present no difficulty were the yard adopted as the unit,—and so far as lineal measure is concerned, there is no doubt whatever, that by adopting the yard as the basis, every subdivision forming a binary part of a yard, can be represented by a decimal number, without a repetend; while in the case of inches, or combinations of inches not forming such binary part, they must be represented by an interminable decimal. Were it arranged that the yard should be subdivided into a different number of parts (rather than inches) than it is at present, a great part of the difficulty would be obviated; but as this would also necessarily involve an alteration in the subdivision of the foot, rather than in the foot itself (provided the parts, or *inches* if they may be so called, composing a yard, formed a triad), it becomes a question how such an alteration could be effected with least disturbance to existing arrangements and customs. It really seems that of the three distinct divisions of measurement (the yard, the foot, and the inch), the latter is capable of some conventional alteration with the least amount of inconvenience, although this opinion is expressed with great deference to the opinions of those whose practical experience might enable them to produce arguments in favour of the inch, as the most important measure of the three. But if we are ever to adopt a decimal system of measurement, it is absolutely indispensable that the yard should be differently subdivided than it is at present, or that it must cease to exist as a distinctive space in measurement altogether, an idea which can scarcely be entertained. We are reduced, therefore, to these considerations, namely, that the yard must still be divisible by 3, *in order to preserve the foot intact,*—that this is to be accomplished by either reducing the number of inches in a foot to 11, or by increasing them to 13; or we must make the inches in a yard divisible by 5, or in the foot by 10, with a view to a decimal enumeration. To divide the yard into 33 inches, or 39 inches, would render it unfit for decimal notation; but we shall contrast these subdivisions with those numbers more applicable to that purpose.

COMPARATIVE VIEW OF ONE YARD DIVIDED INTO DECIMAL PARTS.

| 1 Yard = | 36 | 33 | 39 | 40 | 35 | 30 |
|---|---|---|---|---|---|---|
| ¾ths | 27. | 24.75 | 29.15 | 30. | 26.25 | 22.5 |
| ½ | 18. | 16.5 | 19.5 | 20. | 17.5 | 15. |
| ¼ | 9. | 8.25 | 9.75 | 10. | 8.75 | 7.5 |
| ⅛ | 4.50 | 4.125 | 4.875 | 5. | 4.375 | 3.75 |
| 1/16 | 2.25 | 2.0625 | 2.4375 | 2.5 | 2.1875 | 1.875 |
| 1/32 | 1.12½ | 1.03125 | 1.21875 | 1.25 | 1.09375 | .9375 |

COMPARATIVE VIEW OF DECIMAL PARTS IN RELATION TO ONE YARD.

| Inches. | | 36 | 40 | 39 | 35 | 33 | 30 |
|---|---|---|---|---|---|---|---|
| Parts of 1 Yard. | ⅛ | .125 | .1125 | ·1153846 | .128571 | .136 | .15 |
| | ¼ | .25 | .225 | ·30769 | .257142 | .27 | .3 |
| | ½ | .50 | .45 | ·61538 | .514285 | .54 | .6 |
| | ¾ | .75 | .675 | ·692307 | .771427 | .81 | .9 |
| | 1 | 1. | .9 | .923076 | 1.028571 | 1.0909 | 1.2 |
| | 1⅛ | 1.125 | 1.0125 | 1.0384615 | 1.157142 | 1.227 | 1.35 |
| | 2¼ | 2.25 | 2.025 | 2.076923 | 2.314284 | 2.45 | 2.7 |
| | 4½ | 4.5 | 4.05 | 4.153846 | 4.628568 | 4.90 | 5.4 |
| | 9 | 9. | 8.1 | 8.307692 | 9.257136 | 9.81 | 10.8 |
| | 12 | 12. | 10.8 | 11.076922 | 12.342848 | 13.09 | 14.4 |
| | 18 | 18. | 16.2 | 16.615384 | 18.514272 | 19.63 | 21.6 |
| | 27 | 27. | 24.3 | 24.923076 | 27.771408 | 29.45 | 32.4 |
| | 36 | 36. | 32.4 | 33.230768 | 37.028544 | 39.27 | 43.2 |

From these tables it is evident, that the division of the yard into 30 parts would be the most convenient, not only because it would require in practice the smallest number of figures, but because its *third* or 10 parts (a decimal number) would be equivalent to one foot; while 40, the next most convenient division of the yard, is wholly incapable of decimal notation, as the foot could not be represented unless by a circulating decimal. To be fully satisfied of this, we have only to carry out a similar calculation with reference to the foot in its relation to the yard, which is to be attained by the division of these results by 3. But as the foot itself is a most important element in the consideration of this question, and particularly as it may be regarded as best adapted for the unit in a decimal division, we need only compare it in its relation to the yard as divisible into tenths or twelfths, to enable us to determine which of these subdivisions would be most convenient for adoption in a decimal arrangement.

Inches compared with Tenths.

| | | | | |
|---|---|---|---|---|
| 1 | inch | = | .833 | tenths |
| 2 | „ | = | 1.666 | „ |
| 3 | „ | = | 2.5 | „ |
| 4 | „ | = | 3.333 | „ |
| 5 | „ | = | 4.166 | „ |
| 6 | „ | = | 5. | „ |
| 7 | „ | = | 5.833 | „ |
| 8 | „ | = | 6.666 | „ |
| 9 | „ | = | 7.5 | „ |
| 10 | „ | = | 8.333 | „ |
| 11 | „ | = | 9.166 | |
| 12 | „ | = | 10. | |

Tenths compared with Inches.

| | | | |
|---|---|---|---|
| 1 | tenth | = | 1.2 |
| 2 | „ | = | 2.4 |
| 3 | „ | = | 3.6 |
| 4 | „ | = | 4.8 |
| 5 | „ | = | 6. |
| 6 | „ | = | 7.2 |
| 7 | „ | = | 8.4 |
| 8 | „ | = | 9.6 |
| 9 | „ | = | 10.8 |
| 10 | „ | = | 12. |

From this comparison, it is demonstrated (what is indeed a truism), that it is altogether impossible to preserve the inch (the twelfth of a foot), if we are to decimalise measurements with the foot as a unit; while on the other hand, if the foot were subdivided into tenths instead of twelfths, such arrangement would not only effect such decimalization, but the result would be the same as if ten-pence were made the integer of a decimal coinage, *thus placing lineal measure in perfect harmony with the currency.*

The rule for ascertaining the *specific gravity* of different bodies, affords at all times, the means of reproducing the precise dimensions of the foot were it possible to lose them. By adopting the foot therefore, subdivided into 10ths, 100ths, and 1000ths, as the unit of decimal measurement there is no interference with the integrity of the yard itself, although a decimal division of it is recommended into thirty parts instead of thirty-six inches; and, there seems no great difficulty in reconciling such an alteration to ready adoption, because there might be stamped the equivalents in tenths at those points where the halves, quarters, eighths and nails are at present marked on the yard measure, and which would speedily be made available when the application of decimal measures to decimal coinage, would become familiar to the public. The foot seems to occupy the same position with respect to measures as the pound Troy does with reference to weights—it is more conveniently adapted to a *descending* than an *ascending* system, and perhaps by suggesting it as a unit for decimal calculations, it is sufficient to limit its operation to a *downward* course only, particularly as its upward decimals cannot be reconciled with any of those upward measurements of which as one-third of one yard, it is merely a sub-multiple.—*ex. gr.*

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 1 yd. = | 3 ft. |
| | | | | 1 pole = | 5½ „ = | 16½ „ |
| | | | 1 fur. = | 40 „ = | 220 „ = | 660 „ |
| | | 1 mile = | 8 „ = | 320 „ = | 1760 „ = | 5280 „ |
| | 1 lea. = | 3 „ = | 24 „ = | 960 „ = | 5280 „ = | 15840 „ |
| 1 deg. = | 23 $\frac{1}{27}$ „ = | 69 $\frac{1}{9}$ „ = | 552 $\frac{8}{9}$ „ = | 22115 $\frac{5}{9}$ „ = | 4865433 „ = | 14596299 „ |

It will be seen at a glance, that the yard itself, is completely inapplicable as an ascending decimal to any other fixed points of measurement, as none other than a mixed number can define them. Were the yard or the foot adopted as a unit for an ascending system of decimals, the comparative results would be thus, with reference to the existing points of measurement:—

1. yard = 1 yard.
10. „ = 1 pole, 4½ yards
100. „ = 18 poles, 1 yard
1000. „ = 4 furlongs, 120 yards
10,000. „ = 5 miles, 1200 yards
10,0000. „ = 18 leagues, 2 miles, and 1440 yards
1,000,000. „ = 8 degrees, 15 miles, and 415 yards
1. foot = 1 foot
10. „ = 3 yards, 1 foot
100. „ = 6 poles, 1 foot
1000. „ = 1 furlong, 20 poles, 2 feet
10,000. „ = 1 mile, 7 furlongs, 100 feet
100,000. „ = 6 leagues, 7 furlongs, 20 poles, 10 feet
1,000,000. „ = 63 leagues, 3 furlongs, 100 feet.

It is here established, beyond all question, that neither the foot nor the yard can be made available as a unit for an ascending decimal; and we need only compare the ascending decimals of the other points of measurement in their relations to the inch, the foot and the yard, to be satisfied that they possess no recommendation within themselves to be chosen as units for decimal division.

In truth, these comparative results are only useful, as proving that no decimal proportions beyond the foot can, by any possibility, be arrived at, unless by discontinuing the incongruity which exists in the relative proportions of measurement in the higher points, which can alone be accomplished by substituting another system of measurement capable of decimal division; in other words, *by altering our entire system of lineal measurement beyond the yard.* A change of this kind is one for which, we apprehend, the country is not prepared, as it would occasion much disturbance in the existing relations of society—geographically and scientifically,—and lead to much inconvenience, by raising questions in respect to the measurement of landed property, as at present established by law. Were such alteration to be recommended for the serious consideration of Parliament, it would be better, for many reasons, if a decimal division of Long Measure were considered necessary, that our entire system of measures should be superseded in favour of the French theory, however objectionable that theory may be, as it would, at least, be attended with the advantage of assimilation to a system scientifically established, and which would do much towards the simplification of our arrangements with the continent of Europe, and to the introduction or adoption of one universal principle. At present, however, for the purposes of this inquiry, it may be sufficient to confine attention to the question of decimalising lineal measurement *with reference to commercial purposes alone;* in which case, these may be considered as in a great degree attained, by restricting the question to a yard and its sub-multiples only.

The only other points in Long Measure are, the palm, of 3 inches, equal to 2½ tenths; the hand, of 4 inches, equal to 3⅓ tenths; and the span, of 9 inches, equal to 7½ tenths. These, although still legalized by statute, may be safely allowed to amalgamate in the restricted system of Long Measure here recommended, as the alteration would have the advantage of affixing a *definite* and exact measurement, in the place of a rude system, attended in many cases with deception. The fathom, of 6 feet, would remain undisturbed, as it would in no degree be affected by the change.

# CHAPTER IV.

## On Superficial or Square Measure.

THE next subject of consideration is the Imperial Superficial, or Square Measure; and in this inquiry the same reasoning may be followed as has already been used in the instance of Long Measure. The same rule applies which has been suggested there, namely, that the foot should be divided into ten parts, thereby giving a square of 100 parts, instead of the square foot of 144 inches, as exists at present. This measure, and its proportions to the French square metre, stands as under:—

| | | Parts. | | | Fr. Sq. Metres. |
|---|---|---|---|---|---|
| 144 inches | = | 100 | = 1 square foot | = | .0929 |
| 9 square feet | = | 900 | = 1 square yard | = | .8361 |
| 30¼ square yards | = | 2925 | = 1 square pole | = | 25.2920 |
| 40 square poles | = | 117,000 | = 1 rood | = | 1011.6662 |
| 4 roods | = | 468,000 | = 1 acre | = | 4046.6648 |

In architectural and scientific measurements, made by the scale, the inch is generally subdivided into *tenths* rather than *twelfths;* but in squaring artificers' work, the dimensions are determined by the duodecimal system; the inch is divided into 12 parts or lines, each part into 12 seconds, and each second into 12 thirds. But it may be safely believed, that these divisions can be superseded in favour of 10ths, 100ths, and 1000ths, not only without inconvenience, but with great advantage.

Square Measure affords easier means of arriving at a decimal division, with reference to its existing points of measurement, than Long Measure, particularly as regards Land, which is usually measured by *chains,* each measuring 4 poles, or 22 yards, divided into 100 links. As ten such chains in length and one in breadth are equivalent to one acre, this affords a decimal division, with the acre as the unit. But as the acre contains 4840 square yards, each square link therefore contains 4.84 square yards, thus—

|  | Chain. | Link. | Square Yards of 9 feet. | Square Feet of 100 parts. |  |  |
|---|---|---|---|---|---|---|
|  | $\frac{1}{100}$ = | 1 = | 4.84 = | 43.56 |  |  |
|  | $\frac{1}{10}$ = | 10 = | 48.40 = | 435.60 |  |  |
|  | 1 = | 100 = | 484.00 = | 4356.00 | 4 poles | 22 yds. |
| 1 acre = | 10 = | 1000 = | 4840.00 = | 43560.00 | 0 „ | 20 „ |

Were an arrangement of this kind adopted, it would involve the necessity of dividing the Imperial Standard Measure into two separate parts, one with the foot as the unit, and the other with the acre; but as these distinctions differ so widely in their practical operation from each other, little inconvenience would be felt by the change. Indeed, the present division of Square Measure, according to the standard, is scarcely applicable to the various requirements of the community, and in suggesting this decimal distinction between the more minute and the more extensive measures of space, we should only be consulting the convenience of trade and agriculture, by recommending a simpler division appreciable by both, without interfering with those cardinal points of measurement with which they are so closely identified.

The larger points of measurement—furlongs, miles, leagues, and degrees — are of so distinctive a character, and involve such weighty considerations of a geographical nature, that in any inquiry of this speculative kind, it would not be expedient to interfere with them. We have, therefore no suggestion to offer which would even promote, far less recommend, any change in their existing relations. They may be considered as purely geographical, and it is submitted, that when a change is considered desirable to be made in them, it ought alone to be made on a strictly geographical, and, if possible, *universal* principle.

# CHAPTER V.

## On Cubical or Solid Measure.

*Cubical or Solid Measure* is thus represented by the statute—

1728 cubic inches = 1 cubic foot.
27 cubic feet = 1 cubic yard.

Adopting the rule for ascertaining the specific gravity of solid bodies to be likewise the basis for this measure, we would suggest the following in substitution of the statute measurement, viz.:—

1 cubic foot of 1728 cubic inches = 1000 cubic parts.
27 cubic feet = 1 cubic yard = 27000 „

In the particular description and varieties of bodies to which solid or cubic measure is applied, there can be no doubt that the result could be attained with greater ease by a decimal calculation, than by the system of cross-multiplication now used for that purpose. But it is doubtful whether any advantage would be gained by discontinuing one of these measures in favour of either the foot or the yard singly, as both are used so extensively for special objects. The cubic foot, for example, is the universal measure for ascertaining the dimensions of tonnage of ships as well as of cargo for freights, 40 cubic feet being held to be equivalent to a ton, as well as for the measurement of timber, for which the yard would be an inconvenient measure,—while all excavations, embankments, and works of that class, are usually contracted for by the square yard, although measured by the foot. It must, however, be admitted, that in ascertaining the measurement of *case* goods for freight, the result would be attained by our present duodecimal practice, quite as expeditiously and with fewer figures than by decimals. Take a case measuring 3 ft. 3 in. × 2 ft. 6 in. × 4 ft. 9 in., which would be represented in decimals by 3.25 × 2.5 × 4.75, the separate processes are represented thus:—

| | | | |
|---|---|---|---|
| 3 | 3 | | |
| 2 | 6 | | |
| 6 | 6 | | |
| 1 | 7 | 6 | |
| 8 | 1 | 6 | |
| 4 | 9 | | |
| 32 | 6 | | |
| 6 | 1 | 1 | 6 |
| 38 | 7 | 1 | 6 |

3.25
2.5
1625
650
8125
4.75
40625
56875
32500
38.59375

But were the foot subdivided into ten parts, measurements could be calculated with great facility, as the parts themselves (as in the instance of inches) would be the lowest dimensions used, without making it necessary (unless in cases where great precision was required) to have recourse to decimals of these parts. For example, take as an approximation, the following:—

Required the cubic contents of a case measuring F. D. 3.3 × 2.5 × 4.7.

3.3
2.5
165
66
825
4.7
5775
3300
38.775 = or 38.7¾

In the calculation of excavations or embankments, (where measurements are not always taken by feet, and afterwards reduced into yards,) were greater precision required than the cubic yard itself, the same process could be adopted by adding a single figure to represent the number of tenths, in addition to the yard; which, as the yard would be subdivided into 30 parts, would comprehend in each tenth three of these parts—a system which would afford greater exactness than the rough practice of taking the measurement by yards only, without noticing its fractional parts, and by this means the yard itself would become the unit of measurement and calculation.

# CHAPTER VI.

## On Liquid and Dry Measure.

*Measures of Capacity* are regulated thus, viz.

4 gills = 1 pint = 34¾ cubic inches nearly.
2 pints = 1 quart = 69¼ ditto
4 quarts = 1 gallon = 277¼ ditto
2 gallons = 1 peck = 554½ ditto
8 gallons = 1 bushel = 2218⅕ ditto
8 bushels = 1 quarter = 10¼ cubic feet nearly.
5 quarters = 1 load = 51⅓ ditto

" The four last of these descriptions are used for dry goods only; " for liquids, several denominations have been heretofore adopted, " viz.:—for Beer, the firkin of 9 gallons; the kilderkin, of 18; " the barrel, of 36; the hogshead, of 54, and the butt, of " 108 gallons . . . . . . For Wine and Spirits, there are the " anker, runlet, tierce, hogshead, puncheon, pipe, butt and tun; " but these may be considered rather as the names of the casks " in which such commodities are imported, than as expressing " any definite number of gallons. It is the practice to guage " all such vessels, and to charge them according to their actual " contents. Flour is sold nominally by measure, but actually by " weight, reckoned at 7 lbs. Avoirdupois to a gallon."—(*British Almanac for* 1854.)

It is here evident that the gallon is the dominating measure, and is, therefore, the most desirable for the unit of a decimal division. According to Ingram, in his Rules for the *Measurement of Solids,* the capacity of the following measures are described thus:—

1 Imperial Gallon . . . . . . . . . . . . . = 277.274 cubic inches
1 Imperial Bushel . . . . . . . . . . . . . = 2218.192 „
1 „ of Ground Malt = 2273.461 „

The statute having affixed " 10 pounds Avoirdupois to be the " standard of 1 gallon of distilled water, weighed in air, at the " temperature of 62° of Fahrenheit's thermometer, the barometer "being at 30 inches;" the capacity of the gallon is therefore a fixed quantity, at all times capable of scientific demonstration. And, as the rule for ascertaining specific gravity has determined that 1000 ounces Avoirdupois are equivalent to 1 cubic foot of distilled water (or 1728 cubic inches), it follows, that 277.274 cubic inches, the contents of 1 gallon, are equal to 160.459 oz., (or 160 oz., making allowance for difference of temperature and the density of the atmosphere) which are equal to the 10lbs. Avoirdupois, as affixed by the standard. And, as 1000 oz. Avoirdupois are equivalent to one cubic foot divided into 1000 cubic parts, every ounce is, therefore, equal to 1 cube measuring $\frac{1}{10}$th of one lineal foot on each side—we have here therefore a rule for determining ***length, capacity,*** and ***weight.***—(Appendix D.)

Were the gallon adopted as the integer, that measure and its multiples would be thus decimally represented—

1 gill, or $\frac{1}{32}$ of 1 gallon = .03125
1 pint, or $\frac{1}{8}$ " = .125
1 quart, or $\frac{1}{4}$ " = .25
1 pottle, or $\frac{1}{2}$ " = .5
1 gallon . . . . . = 1.
1 peck . . . . . . = 2.
1 bushel . . . . . = 8.
1 coom . . . . . . = 32.
1 quarter . . . . . = 64.

Or the Imperial Wine and Beer measure might be thus decimalized; the gallon consisting of six different measures, viz.—

1 *gallon* = 10 *pounds Avoirdupois of distilled water.*

| Gallon. | Quart. | Pint. | ½ pint. | Quarterns. | ½ quartern. | | |
|---|---|---|---|---|---|---|---|
| 1 | 4 | 8 | 16 | 32 | 64 | = gallon | 1 000 |
| | 1 | 2 | 4 | 8 | 16 | = quart | :250 |
| | | 1 | 2 | 4 | 8 | = pint | .125 |
| | | | 1 | 2 | 4 | = ½ pint | .0625 |
| | | | | 1 | 2 | = quartern | .03125 |
| | | | | | 1 | = ½ quartern | .015625 |

It is here evident, that all the aliquot parts of a gallon, represented by the different measures of which it is the multiple, are most conveniently adapted to a decimal division. If we compare the decimal proportions of the gallon itself, we find

| | | | | |
|---|---|---|---|---|
| $\frac{1}{10000}$ of 1 | gallon | .0001 | = | too small for public use |
| $\frac{1}{1000}$ 1 | „ | .001 | = | |
| $\frac{1}{100}$ 1 | „ | .01 | = | $\frac{1}{3}$rd of 1 gill nearly |
| $\frac{1}{10}$ 1 | „ | .1 | = | $\frac{1}{19}$th of 1 gall. = $\frac{2}{5}$th of 1 qrn. |
| 1 | „ | 1. | = | 1 gallon |
| 10 | „ | 10. | = | 1 peck and 1 bushel |
| 100 | „ | 100. | = | 1$\frac{1}{2}$ quarters nearly |
| 1000 | „ | 1000. | = | too large for public use |
| 10000 | „ | 10000. | = | |
| 100000 | „ | 100000. | = | |

It is not likely that a lower decimal denomination, will ever be required than $\frac{1}{100}$th of one gallon, if indeed, decimal parts of liquid measures under the gallon itself are ever likely to be adopted. A great distinction also will ever continue to be drawn between wholesale and retail quantities. The simple sub-division into halves and quarters, is so natural in itself, particularly with respect to commodities whether liquid or solid, in common use (these subdivisions being represented by specific measures), while a decimal division, not apportioned on the same principle, would scarcely furnish sufficient quantities for public convenience, that the binary principle where quantities are small, is likely to continue popular, in despite of any attempt to introduce a decimal division for measuring such commodities. In such cases, the convenience of the people is, after all, most likely to determine the rule, but *a decimal denomination applicable to such halves or quarters*, will be nevertheless valuable, in the event of a decimal system of coinage being introduced. And it is only, in such an event, that a decimal system of weights and measures could really be introduced with advantage, seeing that their duodecimal division is better adapted to the compound system of currency at present in use in this country.

The Imperial Standard bushel for heaped measure is not capable of decimal demonstration; indeed, it would be an improvement to supersede such a principle of measurement altogether in favour of 80, or rather 100lbs. Avoirdupois, or even both; for the bushel of 80lbs. being the measure in use at present, might be continued as the *old* measure, while the bushel of 100lbs. would be introduced as the *new*. The advantage of the strictly decimal proportion between the gallon and the new bushel of 10 gallons, would speedily supersede the old bushel of 8 gallons; and in the same way 10 new bushels would speedily be adopted as the new quarter in place of the 8 bushels at present in use; if even the quarter itself might not with advantage be discontinued in favour of the smaller measure.

## CHAPTER VII.

Suggestions as to principles of decimalization—Importance of affinity between Weights, Measures, and Coins.

It is therefore suggested,

1st. That as 7000 Troy grains are declared to be equal to 1lb. Avoirdupois, and, as the cubic foot of distilled water at a temperature of 62° is equivalent to 1000 ounces Avoirdupois, such cubic foot shall be held to be the test of weight capacity and extension.*

2nd. That the pound containing 7000 Troy grains, divided into 1000 parts, shall be held to be the integer of Avoirdupois weight.

3. That the lineal foot shall be divisible into ten equal parts, and that three such feet, or thirty such parts, shall be equal to one yard.

4. That the square foot shall contain 100 such square parts.

5. That the cubic foot shall contain 1000 solid parts or cubes, each cube measuring one-tenth of one foot, on each of its six sides.

6. That as ten pounds Avoirdupois is equal to one gallon of distilled water at the temperature stated, the gallon thus determined shall be held as the unit of capacity, as well as the test of weight.

Were those suggested alterations adopted and introduced simultaneously with a decimal system of coinage, there is no doubt such an arrangement would conduce largely to the convenience of the public in their monetary calculations. It cannot, however, be denied, that the present duodecimal or compound system affords great facilities to those persons who have acquired a familiarity with the different methods afforded by that system of arriving with wonderful rapidity at correct arithmetical results. For example, in measuring the proportions of quantities and prices, and adjusting them to each other, cwts. in their relation to tons, are reckoned by halves, quarters, fifths, eighths, and twentieths; while pounds in relation to cwts. are taken as halves, quarters, sevenths, eighths, fourteenths, and sixteenths; the money pound itself is divisible into halves, thirds, fourths, fifths, sixths, eighths, tenths, twelfths, and twentieths, all bearing some aliquot relation to the quantity; while the shilling and pence are divisible, on nearly a similar principle, and are readily available in their relation to quantities for the purposes of mental calculation. Many trades make it a rule to sell their commodities arranged in quantities to afford such facilities; innumerable articles are put up in dozens, so that they may harmonize with the proportions which they bear to the pence in a shilling, or the fractions of a penny. Were a system of decimal coinage introduced, quantities would cease in practice to be put up in *dozens,*—they would be formed into *tens,*—and as the tenth part of one penny, were a tenpenny unit introduced, is so much more minute a fraction than our present farthing, the decimal system might be expected speedily to reconcile itself to the convenience of the people. Quantities in harmony with prices would be introduced to suit mental processes of calculation, and in a brief space, when the people had been sufficiently trained, they would arrive at results by decimals with great rapidity. The difference which even now exists in some trades between wholesale and retail purchases may have occasioned the distinction observed in the weight of commodities, as we find in the case of the long hundred of 120 lbs. in contradistinction to the short hundred of 112 lbs.; but the modes of calculating quantities seem always adapted to the proportions which the grosser weights bear to the coinage. In the former (6 score pounds) every penny per pound is equal to 10*s.* per long cwt. or £10 per ton; and calculations are, therefore, made with the greatest ease. In the same way, where the cwt. is 112 lbs., every farthing per lb. is equal to 2*s.* 4*d.*, or 2⅓ of £1 = £2. 6*s.* 8*d.* per ton, and the mind becomes speedily familiar with a system of calculation, where its lowest denomination has a certain fixed value, easily convertible by our present compound coinage into the higher monies of account. So would the mind become familiar with a decimal system of currency, where the calculations are not so complex in their character, if the unit or integer were of so small a denomination as to admit of its decimal subdivisions being easily applied to articles of a corresponding value.

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* This is by no means a new idea—it was in principle suggested by Mr. Henry Goodwyn, in a pamphlet published in 1816, on Weights, Measures, and Coinage.—(See Appendix E.)

## CHAPTER VIII.

On the unit for Decimal Coinage—Public convenience the best rule for the unit—Motives which governed the French Commission—Importance of a low unit—Loss on Coins by abrasion—Influence of Machinery on prices.

At the present moment considerable difference of opinion exists as to the most desirable unit to be adopted as the basis for a decimal system of coinage. In the Report of the Committee appointed in 1849, by the House of Commons, £1. was recommended as the best integer for that purpose; an Association has been formed to carry that recommendation into effect, and a majority in Parliament, in favour of that principle, has led to a Royal Commission being appointed to inquire into the subject. As this is a question involving many most important considerations, it is doubted whether the Committee of the House of Commons, or the so-called Decimal Association, have given that attention to the question, in all its bearings, which its importance deserves:—Were there *no other* considerations to be entertained than the expediency of preserving the pound sterling as the unit, there would be found very few persons who would be disposed to offer any objection to such an integer, seeing that the pound is so intimately mixed up and identified with all the monetary transactions of the country; but with the greatest possible deference to the opinions of its advocates, we are inclined to believe, that the great object to be achieved in the decimalisation of our coinage is, or ought to be, the adoption of such an unit *as shall be most convenient, not only for the purposes of circulation, but for the processes of calculation, and for matters of account;* and these points do not seem to have received sufficient attention at the hands of the Decimal Association.

Although various integers have been proposed, besides the *pound* and *tenpence*, as best adapted for a Decimal Coinage, the question seems, at length, to have resolved itself into these distinctive elements: and the object of this inquiry is, to ascertain, by comparison, which of these individual units is best entitled to be adopted as the basis of such Decimal Coinage. The principle of Decimal Arithmetic is of course the same, whatever may be the unit chosen as the integer of the Coinage; but it is the *application* of that principle, which it is of deep importance to the community should be wisely determined;—whether the integer should be one representing a *high* value or a *low* value;—whether it should be a *descending* decimal, comprehending very few of the existing coins of a lower denomination, or an *ascending* decimal, comprehending every coin at present in use—a principle, also, which should be applicable to *the coins for circulation,* as well as to *monies of account.*

The Royal Commission recently appointed to inquire into the expediency of introducing a Decimal System of Coinage into the United Kingdom, in place of the mixed system at present in use, have a difficult as well as an onerous task to perform. The question is one of too much importance to be determined without the closest investigation; for, however flattering to pre-conceived opinion, a majority of the House of Commons may be, it is a question which will have to stand its trial at the bar of public opinion; a practical test controlling even Parliament itself; and it would be most unfortunate, if the Commissioners should happen to recommend a change at variance with the universal convenience of the people. As a maxim it may be safely assumed, that Parliament *may* be mistaken, but the people *cannot* err: and in questions affecting the individual interest of every one forming an item of the great mass of the community, there will be no mistake as to the verdict to be pronounced by the public. Lord Robert Grosvenor's Bill, to restrain Sunday trading, had to be withdrawn in rather an undignified manner owing to popular clamour alone; and the Bill, regulating the hours for keeping open public houses, met a similar fate; but mere attempts to prevent the people obtaining their beer on Sunday will be held by them as an innocent innovation, compared with what they would unquestionably consider as a design to abridge, however small, their means of obtaining the necessaries of life.

Perhaps, the Commission for the general decimalisation of Weights, Measures, and Coinage, which was appointed in France, during the great Revolution, was a wise concession to popular opinion, at a most exciting period, besides being a great step in advance of that exclusive sentiment, which, from the homage paid to aristocratic privileges, in the various independent dukedoms and principalities which formed the bulk of the French territory, confined to certain localities an endless variety of customs, scarcely known beyond the district. "Thus Brittany, Picardy, Normandy, Champagne, "Guienne, Burgundy, Provence, Languedoc, Anjou, and numerous

" other territorial divisions, had their own peculiar system of " weights and measures. The result was such a perpetual and in-" tolerable confusion of ideas, and collision of interests, that one " of the earliest cares of the Constituent Assembly was to provide " for this crying evil a prompt remedy."—(See Vattemare's letter, before quoted). That Commission was a popular one, but the present inquiry is of a very different character, and can scarcely be considered as called for by public necessity.

At the present day, it would be extremely useful to the Royal Commission, could the motives be ascertained which led the French Commissioners to arrive at the conclusion, that the livre or franc, then the 24th part of the louis d'or, *ought* to be adopted as the integer of a Decimal Coinage, not for the purposes of circulation merely, but as the unit of account. There cannot be a doubt, that by recommending such a unit, they looked to the convenience of the people alone; they must have felt that a *low* unit rather than a high unit, was not only more in harmony with the value of commodities forming the necessary wants of life, but was more in consistency with the pecuniary means in the possession of the masses to command such commodities. In those days, the French coinage bore a close, if not exact resemblance to the English, in its denominational value; and it was but a reasonable conclusion for the Commissioners to arrive at, seeing that they were about to recommend a change which would alter the character of the currency, that the working classes should not be embarrassed by that change. They must have felt, that if they were to build up a Decimal system of Coinage at all, they must commence with a *low* integer, and not with a *high* one;—indeed it would be somewhat illogical to imagine they could build such a system downwards. If they wished to change the livre of 20 sous, or tenpence, into the franc of 100 centimes, they evidently saw no advantage in mystifying the labourer, by telling him that he must pay hereafter $.020\dot{8}\dot{3}$ of a louis d'or for a fivepenny loaf of bread, when he could obtain the same thing for 50 centimes, or half of a franc. They must, therefore, have seen the necessity of adapting such a change to the wants and convenience of the million and hence arose the French franc. This is precisely the question now to be considered by the English Royal Commissioners; and although we cannot for their benefit resuscitate the ashes of their elder brethren of France, so as to learn from themselves the motives which inspired their choice of the democratic, rather than the aristocratic unit for a Decimal

Currency, the wisdom of such a choice is proclaimed by the whole French nation who have experienced the benefits of such a system, whatever may be the opinions of a wealthy people supposed to be expressed by a majority of their representatives in Parliament, whose misfortune it is, on this question, at least, to legislate for the convenience of the rich, without thinking of the wants or necessities of the poor.

But there must have been other considerations which weighed with the French Commissioners in fixing on a low unit, besides the mere price of commodities. They must have arrived at this conclusion—that the coins most in circulation were those more likely to be in the hands of the lower rather than the higher classes,—and that it would be absurd to base a system of currency on an integer which was practically unknown to the people, not one of whom in 10,000 individuals was likely to possess a piece of gold, nor if he did, was likely to retain it in his possession any length of time without the necessity arising of converting it into smaller coins. The very articles which it required the rich to pay for in gold, were the mere combinations of united labour, furnished by the poor, and paid for in silver or copper. If the coat of a rich man cost four or five louis d'or, it was formed of a variety of articles obtained by his tailor from different sources, each of them paid for in silver, besides the wages paid to a number of individuals employed in different branches of labour before the coat could be produced. The tailor himself, who had to furnish details in his account to his customer, would find it an easier matter to specify his prices by parts of a low unit, where the value of each item was low, than to be compelled to have recourse to an elaborate decimal where the integer was high. If the buttons cost a franc and a-half, it was much more simple to express their price by the figures 1.50f., than by the decimals of a louis—$0.062\dot{4}$. It must have occurred to them that this was only an illustration of the common operations which served to bind the very framework of society together, the whole being but a mere combination of details, and that in fixing on the best unit for a decimal currency, it ought of necessity to be one which was attended with the greatest simplicity, and the least inconvenience to the great bulk of the people.

In the present day, a majority of the House of Commons has deliberately reversed the practical conclusion which led the French Commissioners to propose an alteration of the principle of the coinage. It is impossible, therefore, to escape from the horns of this dilemma—that if the French Commissioners were right, the House of Commons must be wrong. Who is to judge between them? The French people, who cherish the decimal system of coinage with a sort of adoration, holding it up to the whole world for imitation, as one of the brightest sparks which ever emanated from human genius and sagacity; or the British people, who, never having known its practical operation, are wholly unfit to pronounce an opinion worth the least consideration on so important a question? This is the problem which the Royal Commissioners are now called upon to solve.

Were the question to be decided by the circulation of a coin of a high denomination compared with a low one—in other words, between the sovereign and a tenpenny-piece—one of the first points of inquiry ought to be, the relative proportion which the circulation of such coins bear to each other. Now this can best be ascertained by the abrasion of the coins; and we have some insight on this point by a practical experiment in July 1833, when Lord Auckland was Master of the Mint (See Appendix F.), made upon quantities of 1200 each, of sovereigns, half-sovereigns, half-crowns, shillings, and sixpences, 300 of each denomination having been put into circulation, of the coinages of 1817, 1821, 1825, and 1829.

By a calculation, founded on these results, we find that during an average circulation of ten years.

| | | | | £ | s. | d. |
|---|---|---|---|---|---|---|
| £100. value | in | sovereigns, | lose | 0 | 7 | $0\frac{3}{16}$ |
| Ditto | ,, | half-sovereigns | ,, | 0 | 12 | $5\frac{1}{16}$ |
| Ditto | ,, | shillings | ,, | 2 | 11 | $11\frac{1}{2}$ |
| Ditto | ,, | sixpences | ,, | 3 | 11 | 4 |

This comparison is *on an equal number of each of these coins,* and shews, that the loss on the sixpences is about ten times greater than on the sovereigns. Assuming the hardness of the metals to be alike, this would give a proportionate excess in the circulation of the lower coins over the higher. But when the enormous number of silver coins circulating throughout the country compared with gold coins is taken into consideration, all ideas of proportion are destroyed, and there can scarcely be a doubt, that a shilling or a sixpence must change hands *many hundred times oftener* than a sovereign or a half-sovereign.

This is so obvious a truism, that it need not be enlarged on, and that the relative circulation of gold and silver coins would continue the same, whatever may be the basis or integer of a decimal system of coinage, may be equally held to be indisputable. But gold is one of the softest of metals—it is nearly as soft as lead—and when reduced to the standard by the alloy, has much less hardness than the silver coin. There is in truth little comparison between the abrasion of the two; the silver as a coin being so much harder than the gold, and is indeed, as a metal used as an alloy to gold itself. It is the coin of *small* value therefore, and not the coin of *large* value, which is most required for the wants of the people,—indeed, the bulk of society could manage to rub on, (as they have been obliged to do before, and as we fear too many of them will always be compelled to do), without the aid of a gold coin at all, while, if they were deprived of the small coin, they would be at once reduced to a state of barter.

It is inconceivable what a shilling or even tenpence, may not be able to command. From the daily wages of a Dorsetshire labourer with a wife and six children, to the dinner of a nobleman, who may prefer the economy of the City to the luxury of Pall Mall, such a coin is what mathematicians call a "*known quantity.*" Why should it not be the unit? Is there one, except the bankers, whose business it is to deal with totals and not with details, who can deny, that the commodities which administer to the necessities of man, are all of a small value? Have not the improvements in machinery reduced the prices of the leading articles of manufacture, which comprehend his comforts as well as his wants, to a mere fraction of their former value? and are these not further daily reducing from the progressive march of improvement? The whole tendency of human invention of late years is to abridge labour and cheapen commodities. Is not the pound, therefore, as a measure of value, broken into smaller fragments than it was some years ago? Where is this to stop? Will the pound as an integer of the coinage prevent *cotton lace* being calculated at a decimal equivalent to the 64th part of one penny per yard, or cotton being brought from New Orleans, at a similar freight per pound? Is it for the benefit of the people, that their calculations must be made by a large rather than a small decimal? All these questions are subjects of pertinent investigation, in treating of the relative merits of a large integer and a small one,—and are of first importance as points of consideration to the Commissioners who are now engaged on this inquiry. (Appendix G.)

## CHAPTER IX.

State of Silver Currency in 1826—Gold and Silver Coinage compared—French Franc and English Tenpence—Copper Coinage—Postage Stamps.

No person old enough to remember the condition of our silver currency before the re-issue of the silver coinage in 1816, can forget the miserable fish scales which were circulated as shillings and sixpences at that period. Not only had they lost every vestige of coins, but they were worn so thin that they could be easily bent between the fingers, and at length had arrived at such a deplorable instalment of that which they nominally represented, that the people refused to take them at all, from a persuasion that government would not receive them in exchange for the new coinage then about to be issued. Lord Sidmouth (then Home Secretary), caused a notice to be posted in December, stating, "that all such shillings and sixpences, although quite plain, and "reduced in weight, as can be recognised to be standard silver, "will be received in exchange for the new silver coinage." And cautioned the public "against refusing to take in payment shillings "and sixpences of the above description, *as they will answer the "same at their peril!"* On the 1st of March following, two Proclamations appeared in the Gazette—the first, pronouncing the new coinage to be the current legal money of the kingdom; and the second, declaring that the old silver coin, if any of it remain in circulation, shall cease to be legal currency, though the officers of the Mint are authorized to give the taleprice for it, *for three months from the 1st of March.*

It is impossible to conceive any metallic currency so degraded as the silver coinage was, which up to that period had been circulating for years throughout the United Kingdom; but it was only on the approach of an unobjectionable coinage to be introduced in its place that anything like public distrust was exhibited against it. Whether Lord Sidmouth's placard can be justified under the circumstances is of little importance; but the fact is indisputable, that bad as our silver currency was at that period, it commanded at least the confidence of the public—*not from its intrinsic value,* for it was not worth more than half of what it professed to be—

*but from the conventional value* which was attached to it, and the consideration that it answered all the purpose of promoting as well as satisfying the purchase of commodities in the same way that a Bank of England note was able to effect the same thing at the same period, when it was well known there was not a sovereign to meet it in the coffers of the Bank.

Now, one of the arguments raised by the advocates of the *pound* as the integer of a decimal coinage is, that the fixed design of the advocates of the *tenpenny* for that purpose is to destroy the security which the public at present enjoy, and to substitute *silver* in the place of gold as the standard of value.

The loss which the silver coinage sustained prior to the re-issue in 1816, (as it must ever sustain, so long as it continues to be the great agent of exchange amongst the masses of the population), from abrasion alone, may be a sufficient although not a complete answer to such an assumption. If any principle could be established by which the public would lose nothing, there would be less objection to a silver standard. But this can scarcely be. The silver coinage circulates indiscriminately throughout the United Kingdom—although not beyond it, from its inadequate value—it is the coin *par excellence* which has to encounter the friction arising from the hard horny hands of the working classes—is never held by individuals in large quantities, but keeps moving on through all grades of society, jingling loosely in the pocket, and seldom finds its way into the coffers of a bank. On the contrary, gold is a lordly coin, and despises humble company—is kept locked up in strong boxes—is used in the payment of wholesale rather than retail purchases—and is carefully conveyed every day in bags to the bankers. And yet, degraded as a silver currency has been, and as it may be again, it is difficult to imagine any national calamity likely to arise, which could in any way be augmented by a silver standard of value being adopted as on the continent of Europe, provided such a metallic standard had a fixed price for a given weight beyond its present nominal value; there never is likely to be enough of silver coin in any one's possession, owing to its transitory character, to occasion much individual loss, even were the nation declared insolvent to-morrow, and Consols were reduced to *nil.* Indeed, it is scarcely doubtful that in such a state of things, a larger value in silver, both in coin and plate, would be speedily forthcoming than was likely to be produced in the more aristocratic metal.

This question, however, is one more likely to be tested by the excess of our prosperity, so far as the precious metals are concerned, than by any national calamity likely to befal us—against which, indeed, the people would speedily protect themselves. If we are to judge from the enormous importations of gold dust now coming into the country from the recently discovered gold fields in California and Australia, compared with the more limited importations, as well as the large exportations of silver, there are more difficult problems to solve than the possible case of the latter, not only becoming appreciated with respect to the former; but that gold itself may, perhaps, speedily come amongst us in such quantities, as seriously to raise the question, *how far it is expedient to maintain the gold standard at a price beyond its real value;* at all events, Great Britain is certain to continue the market for gold while it holds out a fixed price for it, irrespective of its abundance.

But, as regards the operation of a silver standard, we need only look to France; where it exists, as it likewise does in all the other nations in Europe. We have no evidence that our neighbours are dissatisfied with it, and if we are to judge from the comparative quantity of the metal in their different silver coins, they have much less cause to complain than we have. One of the objections raised by the Decimal Association in the report of their proceedings, against a tenpenny being introduced as the integer for a Decimal Coinage, is this:—" A franc is only $9\frac{51567}{1000000}$d. or a very small " fraction more than $9\frac{1}{2}$d. So, by the adoption of the tenpenny " scheme, we should not be one jot nearer the French system than " we are at present, as a calculation would still be required in any " exchange of money between France and England."—(p. 36.) Now this is an example of the conclusions which are but too often arrived at, where parties do not take the trouble of examining their correctness. The comparative value of the English and French silver standards, is simply this:—

The Troy pound of 5760 grains is coined into 66 shillings of standard silver, consisting of 11 oz. 2 dwts. of fine silver, and 18 dwts. of alloy, in terms of the Act 56 George III. c. 68. The Troy pound, therefore, contains 5328 grains of pure silver, and 432 grains of alloy, or $\frac{37}{40}$ths,—as the French standard is determined by law at $\frac{9}{10}$ths., it follows that the Troy pound contains $\frac{36}{40}$ths; shewing a difference of $\frac{1}{40}$th. in favour of the quality of British silver.

The pound Troy, however, being coined into 66 shillings, while the cost price of bullion is taken at 62*s.* only, it follows that,

| | Grains. | | |
|---|---|---|---|
| A shilling in weight of fine silver and value, contains* .............. .............. | $80.\dot{7}\dot{2}$ | = | 11.27*d.* |
| Deduct $\frac{1}{8}$th to reduce to 10*d.* ................ | $13.\dot{4}\dot{5}$ | = | 1.88 |
| | $67.\dot{2}\dot{7}$ | = | 9.39 |
| Weight and value of a franc.................. | 69.4 | = | 9.69 |
| And the difference of ..................... . | $2.1\dot{2}$ | = | 0.30 |

is equivalent to 3 per cent in favour of the franc, both in weight and value, over the British tenpence. But as the present market price of standard silver is 60*s.* 3*d.* only, it follows, that the silver tenpence is worth only 9·13*d.*, being 5½ per cent less than the French franc.†

It is evident, therefore, that we should suffer no loss were we at once to introduce a tenpenny piece of the present English standard silver—even if the French were so short-sighted as to inveigle the whole of such tenpennies across the Channel, notwithstanding the striking difference in value which the Decimal Association points out, as the advantage lies wholly on our side.

That much-hackneyed maxim of Butler—

"The proper value of a thing,
Is just as much as it will bring,"

was never better illustrated than in the instance of our silver coinage. Who inquires, or who cares, whether a shilling contains a shilling's worth of silver? No one:—it passes from hand to hand as the twentieth part of a pound, and however reduced in value, from the hard usage it may have met with during its career, no one thinks of denying to it the privilege of commanding twelve penn'orth of commodities. It does not maintain this respect from its intrinsic value, nor even from the stamp it carries on its face, as it is not even necessary it should look the thing it professes to be, for many a worn-out franc finds its way across the Channel, to perform good service as an English shilling,—if the franc is sufficiently smooth in the face to pass for the shilling (which has been rubbing along since 1816, and is now smooth enough) it has no difficulty in commanding more than an equivalent quantity of commodities, —it is therefore a matter of public confidence, if not indifference,— as the value is purely conventional. Were the franc offered fresh from the Paris Mint, in all its beauty and integrity, it would be scouted the moment it made its appearance; but let it be old and worn, deprived of much of its value, and all of its comeliness, it becomes a much more valuable coin than it was in France, if coin it can evenbe recognized to be. It is a palpable and tangible paradox,—a thing which by being made worse has become better by at least 25 per cent. than it was intrinsically worth when it was first issued. Not so with gold. After a short trip about town a sovereign is looked upon with suspicion, and loses its character; it is "*weighed in the scale, and is found wanting,*" and it ceases to circulate longer at its nominal value, as it has lost the confidence of the public the moment the turn of the scale is against it. So far, therefore, as silver is concerned, it cannot be doubted, that the standard fineness of the coinage from $\frac{37}{40}$ to $\frac{36}{40}$, so as to bring it to an equality with France and the United States of America, may be changed at once, without encountering any reasonable opposition on the part of the people, as it is never likely to carry more than a conventional value with it, as a material for the coinage, and must eventually, should the necessity arise, be valued by its weight and fineness like any other commodity, and not by the nominal value attached to it,—at a period, too, when public confidence, however shaken in other respects, is not so far shaken as to render our silver coinage an object of question, far less of suspicion. The profit alone which the Government would derive by seignorage on a silver coinage at this reduced standard, would be amply sufficient to compensate for keeping up the coins at their proper value; but the idea cannot be entertained for a moment, that silver is likely to supplant gold as the standard of value, by introducing a coin of tenpence, or by adopting it as the unit of our currency; nor is it even likely, as a matter of expediency, that a double standard (both gold and silver), subject to constant fluctuation in their relative value, will be ever introduced to enter in competition with each other.

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* These weights are verified by Robert Bingley, Esq., F.R.S., the King's Assay Master of the Mint, and Pierre Frederic Bonneville, Essayer du Commerce, as published in his elaborate work on the Coins of all Nations.—*(M'Culloch's Dict. Article Com.)*

† The difficulty which will attend the introduction of an international coinage, is exemplified in the difference which exists between the intrinsic value of the precious metals in England and France. In England, where silver is not the standard of value beyond 40*s.*, the value of the coins, as is here shewn, is considerably less than in France; while, on the contrary, in England, where gold is the standard of value, the intrinsic worth of the metal, from its superior purity and weight, is greatly in excess of the French gold coins.

Our existing alliance with France seems a most auspicious occasion for offering a suggestion on so tempting a subject as a universal coin. There do not occur to us any serious difficulties in the way of carrying it into effect—seeing that the silver coinage is a legal tender only to the extent of forty shillings, and it's value in the estimation of the public (apart from its usefulness) is more conventional than intrinsic. We should, therefore, recommend to the consideration of the Royal Commission, not only an assimilation in the British silver standard to that of France, the latter being better suited for decimal computation, and being also adopted in the United States of America; but the expediency of commemorating the alliance so recently cemented between the two countries, and so welcome to both, by the introduction of a franc or tenpenny piece, which would circulate freely in both countries, if not over the continent of Europe, and be a fitting introduction to that universal system of European monies held to be so desirable.*

The usual practice in Paris is to give 25 francs in exchange for a British sovereign, which leaves a sufficient margin for profit in favour of the French. Therefore,

As 25 francs contain 1735 grains of pure silver
While 20 shillings contain 1614 ditto

It follows that 121 grains of fine silver is received in Paris by an Englishman (or 7½ per cent.) more than he can get at home in exchange for his sovereign. There is, therefore, no doubt whatever that the English silver coinage is greatly overestimated, there being a difference of nearly 10 per cent. between its *nominal* and *intrinsic* value, looking at the average price of silver bullion.† It was from this consideration alone, that the Act 56 Geo. III. c. 68, restricted silver to forty shillings as a legal tender, while gold of the statutory fineness was declared to be alone the standard of value. It is the French people, therefore, and not the English people, who would have any good cause of complaint in the event of an English coin of the nominal value of 10d. sterling being introduced as here suggested; because its intrinsic value, as has been shown above, will be less by 2 grains of pure silver than the French franc, which the Decimal Association are so anxious to keep in remembrance as of less value, being only worth 9½d.

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* Such a coin might be a double obverse, having the effigies of her Majesty and Prince Albert on the one, and the Emperor and the Empress of the French on the other. The "*alliance*" itself, in more senses than one, would not by any means be an inappropriate name for a coin, which could not fail to be welcome to the denizens of both countries.

† The price of silver bullion quoted on 10th August, 1855, is 60¼d. per ounce.

Let us look for a moment at our lowest coins. M'Culloch states that the present copper coinage is over valued by 72 per cent.—he might with great safety, have fixed it at a much higher rate. By our present arrangement 1 lb. Avoirdupois of copper is coined into 24 pence. In the reign of George III. the copper penny weighed one ounce Avoirdupois; but although the weight of the metal is reduced by 33⅓ per cent., there can be no doubt that our copper coinage is inconveniently heavy, and that it would be a great improvement if the weight, and, consequently, cumbrous character of these coins were still further reduced. Who cares about the importance of being able to fall back on a few ounces of copper as an equivalent to all the coins of that metal they are likely to hold in the event of some great national convulsion? What is really wanted is *convenience,*—and this could be better gained by means of small coins, either of copper or mixed metal of the size of a shilling,—rather than by coins of the weight and size of our present penny.

The introduction of the penny postage has occasioned a complete revolution with respect to our lower coins, inasmuch as postage stamps have become a portion of the circulating medium, and may be compared (except as to their intrinsic value) to the small paper monies passing in Austria. It is only in the provision shops and in the low neighbourhoods that copper coins circulate to any great extent. In the west end of London, particularly amongst the silk mercery trades, postage stamps are paid to an enormous extent, particularly as remittances through the Post-office—in a single retail establishment known to us, postage stamps are constantly received in payment, and are held by the proprietor to the amount of never less than five or six hundred pounds, much to his inconvenience. But this trader is only an example—as such a mode of remittance is by no means confined to retail business or particular localities—it has become *general*—and the question forces itself upon us, how far it is judicious, or even expedient, to encourage a paper currency for fractional sums, which is really inconvertible, instead of adopting one which can be readily exchanged for coin? There are few people in business who desire to have their capital, which should be active, invested in postage stamps, if they felt they could refuse to take them without offending their customers. The penny, therefore, which the decimal of a pound would discontinue, is a much more important question than the Decimal Association may imagine, particularly when it is to be regarded as the emblem of an accumulating mass of dormant capital throughout the country.

In an inquiry of this kind, which relates entirely to a decimal division of the coinage, it may be held as a digression to enter upon the question of the standards of the coinage at all; but these remarks upon the subject are called for from the assumption raised by the Decimal Association, that a low unit represented by silver must necessarily occasion an alteration in the standard of value. Nothing, however, is more certain than that gold itself has not long held that eminence, and that it was not even allowed to be a legal tender for a considerable period after it was coined as money. In the earlier periods of our history, there was no standard of value whatever, and the gold and silver were bought and sold at prices regulated by their quantity in the market. Even when their fineness for coinage was regulated by law, the incessant reductions in their value, either from the cupidity or the poverty of the Sovereigns who found it convenient to tamper with them, are a disgrace to our history—the very "*pound*" which the advocates of a high integer are so anxious to preserve exists in name only—for as a coin it has degenerated from 20*s*. to 66*s*. per "*pound*" of silver. In gold, it is only known *nominally*, except as the standard of value,—1 pound Troy weight being coined into £46. 14*s*. 6*d*., or £3. 17*s*. 10½*d*. per ounce.

## CHAPTER X.

Decimals of £1. inconvenient for accounts and calculations—Compared with decimals of 10*d.*—Mental and Decimal Calculations—Properties of Numbers 10 and 12—Numbers of Figures used in each system—Equivalents of £. s. d. and Farthings, in decimals of £1. and 10*d.*

THE Decimal of one pound will be found on analysis to be "*utterly impracticable*" for monies of account, as well as most inconvenient for ordinary calculations—the whole fallacy on the part of the advocates of that integer rests here—as their theory is founded on a *high* integer, which involves the necessity of a *descending* series of decimals, instead of a *low* unit with an *ascending* series of decimals.

This may be exemplified in the single instance of the Mint price of gold (£3. 17s. 10½d. per ounce), which being a price determined by law, may be regarded as a *fixed quantity,* which no system of decimalization of our coinage will be permitted to alter, unless by Act of Parliament. That price is represented by the decimals of £1. as £3.89375; while by the *tenpenny* it would simply be expressed by 93·45. The tenpenny unit has here manifestly, the advantage, *because as it starts from a decimal, twice as small as our smallest existing coin, it necessarily comprehends every possible variety of amount by decimals, which is at present demonstrable by the duodecimal system.* Nor is it possible by any arrangement of coinage forming aliquot parts of £1., to get out of this difficulty, —(so long as it is intended by the advocates of the pound integer, to confine monies of account to three decimal places only), or to define results by calculations which must of necessity descend lower than the mill itself, (the lowest terms of that theory) no provision being made by their system for expressing a precise result.

The late Mr. James Laurie, in his recently published pamphlet on Decimal Coinage, has shewn not only by the arguments he uses, but by the tables accompanying them, that the decimals of one pound are wholly inapplicable either for monies of account, or for circulation, and that the wants of the poorer classes, who have a deep interest in this question, as well as the necessities of trade and commerce require the unit of account to be divisible into a coin of a smaller denomination than the 1000th part of one pound. (Appendix G.) In practice, our present system enables us by adopting a minute fraction of one penny, to indicate a value or price, far lower than the decimal parts of the pound can express, unless by continuing a series of figures beyond the three decimal places, to which by the mil, it is proposed to confine that system. This may be illustrated by the following examples:—By the last advices from New Orleans, freights of raw cotton to Liverpool, are quoted at $\frac{11}{32}$nds, $\frac{3}{8}$ths, and $\frac{7}{16}$ths of one penny, and the comparative value of these freights in mils of £1. and cents of 10d., are as under,—

| d. | | £. | | | 10d. | |
|---|---|---|---|---|---|---|
| $\frac{11}{32}$ | = | $.001432291\dot{6}$ | or $1\frac{83}{192}$ mils | = | .034375 | or $3\frac{7}{16}$ cents. |
| $\frac{3}{8}$th | = | .0015625 | „ $1\frac{9}{16}$ „ | = | .0375 | „ $3\frac{3}{4}$ „ |
| $\frac{7}{16}$th | = | $.00182291\dot{6}$ | „ $1\frac{79}{96}$ „ | = | .04375 | „ $4\frac{3}{8}$ „ |

In Manchester, Gray Domestics are quoted as under,—

| | | | | | | |
|---|---|---|---|---|---|---|
| @$1\frac{7}{16}$ | = | $.00598958\dot{3}$ | or $5\frac{95}{96}$ mils | = | .14375 | or $14\frac{3}{8}$ cents. |
| $1\frac{3}{4}$ | = | $.007291\dot{6}$ | „ $7\frac{7}{24}$ „ | = | .175 | „ $17\frac{1}{2}$ „ |
| 2 | = | $.008\dot{3}$ | „ $8\frac{1}{3}$ „ | = | .20 | „ 20 „ |
| $2\frac{5}{16}$ | = | $.00963541\dot{6}$ | „ $9\frac{353}{480}$ „ | = | .23125 | „ $23\frac{1}{8}$ „ |
| $3\frac{13}{16}$ | = | $.01588541\dot{6}$ | „ $15\frac{85}{96}$ „ | = | .38125 | „ $38\frac{1}{8}$ „ |

These, however, are merely comparative results—although it will be seen at a glance, how easily the lower decimals of the 10*d*. may be converted into a simple fraction—one most important consideration is the process by which these results are ascertained, and it will be sufficient to exemplify this by a single example,—and here it is proper to state that our present duodecimal system, however objectionable for the addition of pounds, shillings, pence, and farthings, is admirably adapted for mental calculations —that universal system which every invoice clerk understands, and must have recourse to, whose business is much concerned in the rapid extension of quantities and prices into their accurate results, but which must be abandoned if decimals are introduced. By mental arithmetic, calculations, apparently the most difficult, are resolved without even putting pen to paper—indeed, *never* by an experienced clerk are such aids had recourse to, unless in the instance of large or intricate quantities or prices. That process is extremely simple, and is founded on the principle of reducing or dividing by 12 or 20, as may be most convenient to the operator, any given *quantity*, while its *price* is increased in the same proportion, so that every *dozen* of articles counts *one*; while if the price be one *penny*, it is in the same proportion taken as one shilling—thus by *mental* arithmetic—

$$\frac{3612 \text{ yards}}{\text{at } 3\tfrac{3}{16}d.} = \frac{301}{3/2\tfrac{1}{4}} = \frac{25}{38/3} + 1 \text{ at } 3/2\tfrac{1}{4}$$

| | £ | s. | d. |
|---|---|---|---|
| at 38/3 | £47 | 16 | 3 |
| | 0 | 3 | 2¼ |
| | 47 | 19 | 5¼ |

| By the simple rule. | By the decimals of *Tenpence* as under. | By decimals of £1, as under 3612 yards at $3\frac{3}{16}d.$ |
|---|---|---|
| 3612 | $3\frac{3}{16} = .31875$ | $3\frac{3}{16} = .01328125$ |
| $3\frac{3}{16}$ | 3612 | 3612 |
| 10836 | 63750 | 2656250 |
| $\frac{2}{16} = \frac{1}{8}$ 451½ | 31875 | 1328125 |
| $\frac{1}{16}$ 225¾ | 191250 | 7968750 |
| | 95625 | 3984375 |
| 12) 11513¼ | 1151.32500 = | 47.97187500 = |
| 20) 95.9.5¼ | £47 19 5¼ | £47 19 5¼ |
| 47.19.5¼ | | |

N.B. In both these cases a laborious process must be first undertaken to ascertain the decimal corresponding to the price.

If, instead of a whole number, we were to take a broken quantity, such as 3612⅜ yards at $3\frac{3}{16}d.$, it will be found that the additional ⅜ths increases the labour of calculation to an enormous extent.

But it is unnecessary to continue examples like these, which are of constant occurrence in the innumerable ramifications of trade, to convince any practical arithmetician, that the decimals of £1., although pronounced to be the only system adapted for the wants of the country, *is utterly and altogether impracticable for the ordinary purposes of business.* It must be evident to all who are accustomed to calculations, involving broken or fractional quantities at minute prices, that a system which requires so enormous an amount of labour to obtain even an ordinary result, is not adapted for the commercial wants of a country like this; indeed, the whole trade of the country would be grievously interrupted, were it possible to inflict upon the people so elaborate a system. In support of this position, we need only appeal to the common rules of arithmetic, as well as to common sense. It is no answer to say, that a *mil* is as capable of fractional subdivision as a penny, because, not only is there no provision made by the milesimal theory for carrying into account a denominational value lower than the *mil* itself, but for want of that duodecimal quality possessed by our existing coinage, *the decimals of a pound are incapable of being* *reduced to a vulgar fraction, with denominators admitting of simple notation.*

In the decimal calculation immediately before us, it is seen that an operation comprehending upwards of 100 figures, in its entire process, is required to produce a result in ten figures, five of which can only be represented in the ledger, according to the proposed theory of the decimals of £1, while the remaining five figures must be dropped as wholly unnecessary. *Indeed, so small a numerical quantity as one eighth of our present penny, could not be shown at all,* leaving lower denominations of value out of the question. And although their approximates, if not their equivalents, could be obtained by a lower decimal, there would, in the "*mil*" system be no place to specify the result. By our present duodecimal, or rather mixed system, we possess advantages in the simplicity of calculations, and the ease with which such calculations are performed, from mixed numbers, forming aliquot parts of the coinage, which a merely decimal system, with a large integer, could not confer. This will be at once seen, if we look at the properties of the numbers 10 and 12, the former of which is divisible by only *two* whole numbers, 2 and 5, without a remainder, while the latter is divisible by *four* whole numbers, 2, 3, 4 and 6; but if we increase these numbers in the same proportion, *i. e.* to 100 and 120, we find that while 100 is divisible only by 2, 4, 5 and 10, 120 is divisible by 2, 3, 4, 5, 6, 8, 10 and 12, the one being capable of division by four numerals only, while the other is divisible by eight, without any remainder. For the purposes of calculation, therefore, it is self-evident, that a thing divisible into twelve parts contains a larger number of aliquot fragments than a thing divided into ten parts; but when it is considered that these twelve parts (or other binary division) are like the foldings of a sheet of paper, formed into halves, quarters, eighths, twelfths, &c., all in harmony with the coinage, it follows, that they are more easily adapted to calculations of aggregate amounts, than quantities of small value and large volume can by possibility be under a decimal system.

But it is not in calculations only that we have to condemn the pound as an integer for our coinage on a decimal principle. We unhesitatingly deny to it that advantage which the advocates of that theory would ascribe to it, as a medium for keeping accounts. In copying the following twenty totals, consecutively entered in, and copied from a mercantile book of accounts, and in converting these totals into the decimals of £1. and 10d. respectively, we shall be able to judge how far the title of a "*labour-saving machine*" can with any degree of consistency be attributed to the higher decimal.*

| £ | *s.* | *d.* | Decimals of £1. | Decimals of 10d. |
|---|---|---|---|---|
| 124 | 15 | 0 | 124.750 | 2994. |
| 148 | 0 | 11 | 148.04583̇ | 3553.1 |
| 25 | 2 | 9 | 25.1375 | 603.3 |
| 121 | 12 | 8 | 121.633̇ | 2919.2 |
| 133 | 3 | 0 | 133.150 | 3195.6 |
| 702 | 13 | 2 | 702.6583̇ | 16863.8 |
| 78 | 17 | 10 | 78.8916̇ | 1893.4 |
| 31 | 18 | 1 | 31.90416̇ | 765.7 |
| 60 | 3 | 9 | 60.1875 | 1444.5 |
| 39 | 16 | 8 | 39.833̇ | 956. |
| 15 | 1 | 5 | 15.07083̇ | 361.7 |
| 39 | 8 | 2 | 39.4083̇ | 945.8 |
| 28 | 2 | 2 | 28.1083̇ | 674.6 |
| 20 | 13 | 11 | 20.69583̇ | 496.7 |
| 19 | 8 | 11 | 19.44583̇ | 466.7 |
| 23 | 18 | 7 | 23.92916̇ | 574.3 |
| 48 | 7 | 10 | 48.3916̇ | 1161.4 |
| 32 | 1 | 5 | 32.07083̇ | 769.7 |
| 29 | 2 | 7 | 29.12916̇ | 699.1 |
| 1722 | 8 | 10 | 1722.4416̇ | 41338.6 |

An analysis of these twenty totals shows that by our *present* system, they require 101 figures to denote them,—by the *decimal* theory with £1. as the unit, they will require 132 figures; while by the *tenpenny* theory, they will be represented by 89 figures only. If, however, the milesimal system were introduced, and that not more than *three* places of decimals were used *at the expense of precision in amount*, the number of figures would be reduced to 107, while 7½ mils would be lost in the amount of the total.

In posting accounts into the ledger, the practice is universal to omit the fractions of a penny. It is scarcely saying too much when we state, that there is no banker, merchant, or trader of the least importance, who either pays or receives them; and it is more than probable, that the same rule may be continued in accounts were the tenpenny adopted as the unit of the coinage, because the second decimal place represents tenths of one penny only.* This would effect a saving alone of one figure in every line posted in the ledger, which comprehended cents of the unit. But it would be out of the question to adopt such a rule in the instance of mils, much less to strike off the figures after the first decimal place, where the pound is the integer—because, while the first figure to the right of the point represents *two shillings*, the second can never be less than $2\frac{4}{10}$*d.*, while it *may* amount to $21\frac{6}{10}$*d.* in value—even the *third* decimal place, will be as often above the value of one penny as below it. One decimal place, therefore, may be all that is considered necessary in the case of the tenpenny, *while*

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* That the decimal of £1. would largely increase labour, has been unanswerably established by Mr. Minasi, in an elaborate calculation made by him of the number of figures required to express in the three systems, every amount between one penny and one million of pounds inclusive, the results of which are published in the *Society of Arts Journal*, for 5th October, 1855, and with his permission are printed in the Appendix (H).

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* It may save trouble to those who may hereafter be seeking for equivalents between the relative values of pence and fractions of a penny, compared with decimals of £1. and 10d., that we should here supply them :—

| £ S. D. | Decimals of £1. | Decimals of 10d. |
|---|---|---|
| 12 Pence. | .05 | 1.2 |
| 11 do. | $.0458\dot{3}$ | 1.1 |
| 10 do. | $.041\dot{6}$ | 1.0 |
| 9 do. | .0375 | .9 |
| 8 do. | $.0\dot{3}$ | .8 |
| 7 do. | $.0291\dot{6}$ | .7 |
| 6 do. | .025 | .6 |
| 5 do. | $.0208\dot{3}$ | .5 |
| 4 do. | $.01\dot{6}$ | .4 |
| 3 do. | .0125 | .3 |
| 2 do. | $.008\dot{3}$ | .2 |
| 1 do. | .00416 | .1 |
| $\frac{1}{2}$ or halfpenny. | $.00208\dot{3}$ | .05 |
| $\frac{1}{4}$ or farthing. | $.001041\dot{6}$ | .025 |
| $\frac{1}{8}$ | $.0005208\dot{3}$ | .0125 |
| $\frac{1}{16}$ | $.00026041\dot{6}$ | .00625 |
| $\frac{3}{16}$ | .00078125 | .01875 |
| $\frac{5}{16}$ | $.00130208\dot{3}$ | .03125 |
| $\frac{6}{16}$ or $\frac{3}{8}$*d.* | .0015625 | .0375 |
| $\frac{7}{16}$ | $.00182291\dot{6}$ | .04375 |
| $\frac{9}{16}$ | .00234375 | .05625 |
| $\frac{10}{16}$ or $\frac{5}{8}$*d.* | $.0026041\dot{6}$ | .0625 |
| $\frac{11}{16}$ | $.00286458\dot{3}$ | .06875 |
| $\frac{12}{16}$ or $\frac{6}{8}$ or $\frac{3}{4}$*d.* | .003125 | .075 |
| $\frac{13}{16}$ | $.00338541\dot{6}$ | .08125 |
| $\frac{14}{16}$ or $\frac{7}{8}$*d.* | $.0036458\dot{3}$ | .0875 |
| $\frac{15}{16}$ | .00390625 | .09375 |

***the whole of three decimal places must be used in the instance of the pound and even then without producing an exact result.*** In small amounts, this is exemplified in a striking manner; for example—

| £ | s. | d. | £ | | 10*d*. |
|---|---|---|---|---|---|
| 1 | 13 | 5 | 1.670 | $8\dot{3}$ | 40.1 |
| 1 | 16 | 7 | 1.829 | $1\dot{6}$ | 43.9 |
| 3 | 9 | 10 | 3.491 | $\dot{6}\dot{6}$ | 838 |
| 5 | 12 | 9 | 5.637 | 50 | 135.3 |
| 12 | 12 | 7 | 12.629 | 15 | 303.1 |

No. of figures, 21. $\left\{\begin{array}{l}\text{21, exclusive of fractions.}\\ \text{31, including fractions}\end{array}\right\}$ 17 precisely.

The tenpenny unit possesses this peculiar advantage in book-keeping, that if the fractions of a penny are omitted in the ledger, as at present, every sum under £4. 3s. 4d. (or 1000 pence) is expressed *in three figures only*—the fractions of a penny themselves, only add *one* figure more, as we see in the example of the fixed price of standard gold, £3. 17s. 10½d = 93.45, but which if £3. 17s. 10d., would be only 93.4, *being three figures only.*

## CHAPTER XI.

Objections to Silver Unit answered by an aggregate in Gold—Proposed New Coinage, and displacement of old—Foreign Exchanges composed by decimals of £1. and 10d.

A GREAT outcry is raised against tenpence as the unit, on the ground that it would lead to the discontinuance of gold coin, and occasion enormous labour to the Bank of England, as well as other Banks, by compelling them to pay and receive everything in *tenpennies instead of sovereigns!!!* This is certainly a most gratuitous assumption; because, a new tenpenny piece, if adopted as the integer of accounts, would displace no coin whatever at present in use, while it would afford an additional division of the pound by 24 as well as by 20, and we can see no good reason why, if there is a gold coin for 20 shillings, there should not also be one for 20 tenpennies. In France, where gold is not the standard of value, gold pieces circulate as low as five francs.

We have already shown that the decimals of a pound are wholly impracticable for such arithmetical operations as involve precision and rapidity in calculation. On that point, therefore, the advocates of the pound as the integer of the coinage, ought at once to join issue, in order to confute that position if it be a false one; but, if they fail in doing so, it becomes a mere work of supererogation to persist in advocating the pound as such integer, while there is nothing to prevent its continuance in circulation as a multiple of the unit. The entire question rests here. A modification of the same theory—namely, that a florin or two-shilling piece be adopted, as the unit, is open to precisely the same objections as the pound, except that it requires only two places of decimals instead of three. In a decimal point of view, neither the pound nor the florin, harmonizes with any existing coin under sixpence; and the florin is obnoxious to the same objection with reference to the gold standard as is urged against the tenpenny, namely, that it introduces a silver unit of account, instead of a gold one. Now this difficulty is readily met by introducing gold coins of 5, 10, 12½, 20, 50, or even 100 tenpennies, which from their convenience, and applicability to matters of account, would speedily displace the sovereign. The pound itself, except from its traditional importance, has no especial claim to be considered as an everlasting unit in this country, if the convenience of the people demand one that is better. Indeed, its very existence as a gold coin was not known before 1816, and our gold standard existed long before it was introduced. To persist in the pound, as a *decimal* integer, is therefore only a vexatious mode of disturbing our currency, doing no good to ourselves, and affecting no approximation to the coinage or exchanges of other countries, as we should remain simply,—" *the same, with a difference,*" but a difference attended with very serious eonsequences.

On the other hand, were the tenpenny unit introduced, our gold coinage could itselfbe advantageously extended, and every coin with reference to that unit, would be thus represented, while the closeness in value of the new gold coins to the guinea and half-guinea, of former and only recent times, might justify the same names being applied to them, viz:—

NEW COINS.

| | | | |
|---|---|---|---|
| Gold... | 4 Guinea Piece | = 100 | Tenpennies. |
| | 2 ,, | = 50 | ,, |
| | 1 ,, | = 25 | ,, |
| | ½ ,, | = 12.50 | ,, |
| | 20 Franc | = 20. | ,, |
| | 10 ,, | = 10. | ,, |
| Silver † | 5 ,, | = 5. | ,, |
| | 1 ,, | = 1. | ,, |
| | ½ ,, | = ·50 | ,, |
| | 1 Dol. | = 5. | ,, |
| Copper. | 1 Cent. | = .01 | ,, |

OLD COINS.

| | | | |
|---|---|---|---|
| Gold... | *1 Sovereign | 24 | Tenpennies. |
| | *½ ,, | 12 | ,, |
| Silver. | *¼ do, or crown | 6. | ,, |
| | ⅛ do. or ½ cwn. | 3. | ,, |
| | *1 Florin | 2.40 | ,, |
| | *1 Shilling | 1.20 | ,, |
| | *1 Sixpence | .60 | ,, |
| | 1 Fourpenny | .40 | ,, |
| | *1 Threepenny | .30 | ,, |
| Copper. | 1 Penny | .10 | ,, |
| | 1 Half-penny | ·05 | ,, |
| | 1 Farthing | .025 | ,, |

The fraction, under these coins, beyond the second decimal places will be readily supplied by ¾, ½, or ¼, if the termination happens to be 75, 50, or 25, but none of the decimals will descend to a lower denomination. In such case, common consent will introduce the 10th, or 100th of one cent. (as is the case at present in the instance of 8th, 16th, or 32nd,) for minute calculations—a precision not unlikely to exist in the invoice, but which would altogether be dropped in the ledger.

However objectionable the *pound* may be, as the integer of a Decimal Coinage, arising almost entirely from its excessive value, there are many reasons which would render the introduction of a Decimal Coinage and a Decimal system of keeping accounts, a matter of great public convenience, particularly where the integer, as in the case of a *tenpenny* coin, would be so small as to be more readily applicable to the value of general commodities, and to the coinage, of other countries. This will be clearly seen in the case of Foreign Exchanges.

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* Those Marked * to be discontinued and called in.

† These silver coins would immediately harmonise with coins in France, Holland, America, Belgium, Genoa, Geneva, Naples, Rome, Madeira, Turkey, Austria, Frankfort, Spain, Gibraltar, and Sicily,—in many instances, *precisely*,—in others, by a near approximation.

The extensive character of our intercourse with foreign countries, renders it necessary that we should compare our existing mode of converting values from sterling into foreign monies, or *vice versâ*. We, therefore, take from *Lloyd's List* indiscriminately the course of exchange as it stood at 5th February last.

We there find, that although the rates in the majority of instances are quoted in foreign monies of a variable amount, and compared with the fixed sum of £1. (which is, however, an anomaly, as persons buying or selling generally value the fluctuating worth of an object by the money of their own country), there are some instances in which the quotations are made in pence, thus:—

| | | | |
|---|---|---|---|
| St. Petersburg is quoted | 35d. | rising | ⅛d. |
| Madrid ............ | 49¾ | „ | ⅛ |
| Naples............. | 43⅝ | „ | ⅛ |
| Palermo, &c., &c .... | 130¼ | „ | ¼ |

Let us look at these quotations with advances, and compare them with the decimals of £1. and 10d. respectively:—

| | | Decimals of £. | Decimals of Xd. | | |
|---|---|---|---|---|---|
| *St. Petersburg*.. | 35 | — $0.1458\dot{3}$ | — 3.50 | | |
| | 35⅛ | — $0.1463508\dot{3}$ | — 3.5125 | or | 3.5⅛ |
| | 35¼ | — 0.146875 | — 3.525 | „ | 3.5¼ |
| | 35⅜ | — $0.1473958\dot{3}$ | — 3.5375 | „ | 3.5⅜ |
| *Madrid*....... | 49¾ | — $0.207291\dot{6}$ | — 4.975 | „ | 4.9¾ |
| | 49⅞ | — 0.2078125 | — 4.9875 | „ | 4.9⅞ |
| | 50 | — $0.208\dot{3}$ | — 5. | | |
| | 50⅛ | — $0.2088541\dot{6}$ | — 5.0125 | „ | 5.0⅛ |
| *Naples*........ | 43⅝ | — $0.1817708\dot{3}$ | — 4.3625 | „ | 4.3⅝ |
| | 43¾ | — $0.182291\dot{6}$ | — 4.375 | „ | 4.3¾ |
| | 43⅞ | — 0.1828125 | — 4.3875 | „ | 4.3⅞ |
| | 44 | — $0.18\dot{3}$ | — 4.40 | | |
| *Palermo*....... | 130¼ | — $0.542708\dot{3}$ | — 13.025 | „ | 13.0¼ |
| | 130½ | — 0.54375 | — 13.05 | „ | 13.0½ |
| | 130¾ | — $0.544791\dot{6}$ | — 13.075 | „ | 13.0¾ |
| | 131. | — $0.5458\dot{3}$ | — 13.10 | | |

The adoption of the tenpenny unit would afford the opportunity of revising the present mode of quoting Exchanges, and of our adopting the mode in use in almost every other country of importance, and which is, undoubtedly, the most natural, by deciding upon a fixed *valuta* in foreign coins, to be valued by a variable *valuta* in British money, as is shown in the subjoined table:—

London Course of Exchange, 11th September, 1855.

| | | | |
|---|---|---|---|
| Amsterdam .. ..... | 11.18 | Guilders and Stivers | per £ |
| Antwerp.. .......... | 25.37½ | Francs and Centimes | ,, |
| Hambro' .......... | 13.8¼ | Marks Bco. and Schellings | ,, |
| Paris .............. | 25.40 | Francs and Centimes | ,, |
| Frankfort-on-the-Maine | 118⅜ | Florins, per £10 | |
| St. Petersburg ...... | 35⅜ | Pence per Rouble | |
| Berlin .............. | 6.21½ | Thalers and S. gros. | per £ |
| Vienna ............ | 11.23 | Florins and Kreuzers | ,, |
| Madrid ............ | 49⅞ | Pence per Dollar | |
| Leghorn............ | 29.95 | Lire and Centimes | per £ |
| Genoa .... ...... | 25.45 | ,, ,, | ,, |
| Naples ............ | 44⅛ | Pence per Ducat | |
| Palermo............ | 132 | ,, per Onza | |
| Lisbon ............ | 53 | ,, per Milreis | |

In place of which the Tenpenny would enable the quotations to be made:—

| | Xdys. | | | THE EXCHANGE RISING OR FALLING. |
|---|---|---|---|---|
| Amsterdam ........ | 201.50 | for 100 | Guilders | 25 cts. of xdy |
| Antwerp............ | 94.60 | ,, | Francs | 5 ,, |
| Hambro'............ | 177.75 | ,, | Mark & Bco. | 25 ,, |
| Paris .............. | 94.50 | ,, | Francs | 5 ,, |
| Frankfort-on-the-Maine | 202.75 | ,, | Florins | 25 ,, |
| St. Petersburg ...... | 354. | ,, | Roubles | 100 ,, |
| Berlin.............. | 357. | ,, | Thalers | 100 ,, |
| Vienna ............ | 210.75 | ,, | Florins | 25 ,, |
| Madrid ............ | 499. | ,, | Dollars | 100 ,, |
| Leghorn............ | 80.15 | ,, | Lire | 5 ,, |
| Genoa.............. | 94.30 | ,, | Ditto | 5 ,, |
| Naples ........... | 441. | ,, | Ducats | 100 ,, |
| Palermo ............ | 1320. | ,, | Onza | 250 ,, |
| Lisbon ............ | 530. | ,, | Milries | 100 ,, |

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* These quotations do not profess to be the *exact* equivalents of the exchanges above quoted, but are approximate and show that the xdy. admits of even smaller advances than the existing system.

## CHAPTER XII.

**Early history of arithmetic in England — Necessity for an affinity between weights, measures, and coinage—Advantages of duodecimal system — Division of £1. in £. s. d. and decimals by 20—Desire to maintain £1. as the integer under any circumstances—Its advocates have not established their case—Plans of different writers—Postscript.**

At the earlier periods of our history, when a system of barter must have been the only means known to the people for exchanging commodities with each other, a defined principle by weights, however rude in its character, was a natural mode of adjusting comparative values. But until the statute for the assize of bread was enacted in the reign of Henry III., there seemed to be no legal means of establishing a contract, and the weights of *grosser* commodities was entirely conventional. We have no evidence that in those days arithmetic itself was even known in the country. That science was only introduced into Britain about the year 1250, as appears by the treatise on arithmetic, by John of Halifax, commonly called *Sacro Bosco,* who died in 1256; and the science of decimals was introduced by John Muller, commonly called Regis Montanus, in his Trigonometrical Tables about the year 1464, while the first who wrote any treatise on the latter subject was Simon Stevin of Bruges, about the year 1582.—(See *Bonnycastle's Introduction to Arithmetic,* 1810.) These ancient authorities are only interesting to us at the present day, as showing the prevailing ignorance of common arithmetic only a few centuries back; but it is well known, that at a much later period of our history (public schools being unknown until after the Reformation) reading and writing were so sparingly diffused amongst even the higher classes of the people, that there must have been a very small number indeed who possessed these accomplishments. The necessity, therefore, for a system of assimilation between weights, measures, and coinage—that mixed or rather that *natural* system which exists at the present day, but which is admirably calculated for an illiterate state of society, must have existed for ages, and have given rise to these numerous local customs (not now eradicated) which are quoted in our various systems of national weights and measures, the majority of which were discontinued by the existing statute.

If there is one reason stronger than another for offering these suggestions, it emanates from the conviction, that any attempt to decimalize our currency, without a corresponding decimalization of weights and measures, will fail to give satisfaction to the country. It is impossible to conceive the confusion which would arise, if we were to have a decimal system of coinage, concurrently with our present mixed system of weights and measures, owing to the absence of any harmony between them. One great object of this work is, to preserve the affinity which exists, and must of necessity continue to exist, on these points; and any attempt to legislate on the one without reference to the other, seems so ill-advised, if not positively mischievous, that we may be excused for entertaining a strong opinion as to the impolicy of such a course. Practical men—those whose everyday business is deeply concerned in trade—will never endure so doubtful a scheme to be forced upon them without necessity, to supersede those ready facilities which our present mixed system so admirably affords for ready calculation; and the principle, however strongly supported, must fall to the ground as a matter of course, simply because it is impracticable.

Decimals are to be entertained in theory as an improvement on our present system, because they have been introduced into the monetary system of other countries; and not because an Association has been formed to enforce a particular system of decimals on the people. If we had never known the advantages of that which is called our *"duodecimal"* system—that system which has become identified with the natural habits of the people—and had only been accustomed to decimals in our trading intercourse with each other, it is exceedingly doubtful, whether that very mixed system, now declared to be so objectionable, would not have been considered to be a great improvement on the other, simply because it affords superior facilities for calculation. This may be considered as a startling proposition in such an inquiry as this, where a preference has been shown to the *principle* of decimal calculation over our present system; but practical rather than theoretical men will understand the distinction, and enough has been said in the foregoing pages to show, if not to establish, the sufficiency of the grounds for such an assumption. At present, every body knows that if one yard costs one pound, one foot costs 6*s*. 8*d*.; but by the proposed scheme with £1. as the integer, there is no possible coin which the *"milesians"* could introduce which would represent the value of the foot precisely. On such a simple question as this, were further evidence wanted, we might have recourse to the decimals of £1. itself—the very integer so stoutly advocated as the best basis for a decimal currency, compared with our existing mixed system—dividing such integer by the numbers 1 to 20; viz.

*Division of £1 by 20 and by corresponding Decimals.*

| | £ | s. | d. | Decimals. |
|---|---|---|---|---|
| 1 | 1 | 0 | 0 | 1. |
| 2 | 0 | 10 | 0 | .5 |
| 3 | 0 | 6 | 8 | $.3\dot{3}\dot{3}$ |
| 4 | 0 | 5 | 0 | .25 |
| 5 | 0 | 4 | 0 | .2 |
| 6 | 0 | 3 | 4 | $.1\dot{6}\dot{6}$ |
| 7 | 0 | 2 | $10\frac{1}{7}$ | $.14285\dot{7}$ |
| 8 | 0 | 2 | 6 | .125 |
| 9 | 0 | 2 | $2\frac{6}{9}$ | $.11\dot{1}$ |
| 10 | 0 | 2 | 0 | .1 |
| 11 | 0 | 1 | $9\frac{9}{11}$ | $.09\dot{9}$ |
| 12 | 0 | 1 | 8 | $.08\dot{3}$ |
| 13 | 0 | 1 | $6\frac{6}{13}$ | $.07692\dot{3}$ |
| 14 | 0 | 1 | $5\frac{2}{14}$ | $.071428\dot{5}$ |
| 15 | 0 | 1 | 4 | $.0\dot{6}\dot{6}$ |
| 16 | 0 | 1 | $2\frac{1}{2}$ | .0625 |
| 17 | 0 | 1 | $2\frac{2}{17}$ | .0588235294 + |
| 18 | 0 | 1 | $1\frac{6}{18}$ | $.0\dot{5}$ |
| 19 | 0 | 1 | $0\frac{12}{19}$ | .0526315 + |
| 20 | 0 | 1 | 0 | .05 |

This comparison applies to any decimal integer, whether £1. or 10*d.*, or any other, in contradistinction to the existing system; and it is there seen that by *£. s. d.* the pound is divisible by 11 different numbers out of 19, into sums represented by our existing coinage, while 8 numbers leave an irregular fraction not represented by our coinage. By *decimals* the pound is divisible by 6 numbers only, showing a precise result in *mils,* leaving 12 circulating decimals, and 1, a result in mils beyond the third decimal place.

There seems to be a prevailing idea on the part of the advocates for one pound as the basis of a decimal coinage, that it is indispensable to retain that integer under any circumstances. But the question is of too national a character to be decided by the views of a class separate from the whole of the community—*it ought to be governed and decided by the consideration of what is due to the general convenience of the people at large.* And when we look at the purposes for which coinage was introduced at all, and is necessary to the social requirements of the humblest as well as the highest of the different classes of society, it is not to be believed that a dislocation of such vast importance could be admitted in opposition to that consideration.

We have shown beyond the possibility of dispute, that a decimal system of coinage, with one pound as the integer, would largely increase the labour of all monetary calculations; that the decimals of such an integer are deficient in precision, unless by the employment of an inconvenient number of figures, and that the pound would otherwise be most objectionable, if not impracticable, as an integer of account. If we are to introduce a decimal system of currency at all, on anything like a satisfactory basis, it is absolutely indispensable that we should abandon the idea of continuing the *pound* as the integer, as it would only lead to confusion if it were preserved in that capacity. The sovereign would still remain as a coin, and continue to circulate, until by abrasion, it ceases to maintain public confidence; but after a few years it would disappear from circulation altogether, like the old guinea, and give place to the new system, without the public sustaining any inconvenience, or even being conscious of the change.

The advocates for a decimal currency, with £1. as the integer, have not, however, established their case; they have not shown the necessity for superseding nearly the whole of our lower coins, for the mere sake of decimalising the pound, or that any advantage would be derived from such decimalisation, beyond the solitary one of carrying the number of tens in one column of figures into the next by simple addition, instead of the number of fours, twelves, and twenties, as we do at present. There ought to be stronger reasons than this before the established usages of the community are interfered with, especially on a subject of such vast importance as the medium which regulates the operations of the people in their trading intercourse with each other. Were the decimalisation of the pound proposed as a means towards the assimilation of our currency with that of other countries, there would be good ground for entertaining it; but, on the contrary, it harmonizes with none of the decimal monetary systems of either the old world or the new. Did it furnish greater facilities for calculations, *that* of itself would be an excellent reason for encouraging so useful and valuable an improvement. But the contrary is the case;—it will *not* shorten nor facilitate such calculations in the least; we will even venture to state, that there is not an ordinary clerk accustomed to mental calculations, who would not extend a page of lace or other goods, consisting of broken quantities, at infinitessimally small prices in a tithe of the time in which the most accomplished arithmetician could effect the same object by means of decimals. This is purely a practical question, and its value will be tested by practical men in despite of any Act of Parliament. It is of the utmost importance, therefore, if the principle of our coinage is to be altered, that it should be well considered whether the proposed alteration would be any improvement; if that is not *perfectly certain*, it would not only be injudicious, but dangerous, to interfere with a system which already works well, and with which the people are satisfied.

Besides, the treatise of Mr. Henry Goodwyn in 1816, already referred to, and which possesses peculiar claims to consideration, as he was the first who suggested the cubical contents of a certain volume of water as a test for weight and measure, there were others who wrote and spoke about the same period on the expediency of decimalising our currency, (see Appendix I,) particularly Mr. John Wilson Croker, and these theories possess greater interest in an inquiry of such importance, when it is seen that our leading journal maintains at the present day the same sentiments with respect to a low unit for coinage as it most consistently did, forty years ago.

## POSTSCRIPT.

Since the foregoing pages went to press, a controversy on this question between Professor de Morgan and the author has been brought to a close. As the discussion, which appeared in the City article of *The Times*,—in a paper in reply published by the Decimal Association,—and in a rejoinder in the *Society of Arts Journal*, embraces the chief points in dispute between the advocates of the penny and the pound, it may not be uninteresting to include it in this publication, more especially as it affords the author the opportunity of removing his anonymous character, which he always felt was uncourteous towards his learned and powerful antagonist. That dicussion is printed in the Appendix K.

# APPENDIX.

## (A.)

*Extract from the* "DESCRIPTION HISTORIQUE ET POPULAIRE DU SYSTEME METRIQUE ET DECIMAL EN FRANCE. Par M. W. W. Mann, Citoyen des Etats-Unis." *Published at L'Imprimerie Administrative de Paul Dupont. Paris.* 1855.

"Au grand honneur de ce savant, le premier mètre provisoire, déduit de la mesure de l'arc du méridien déterminé par *Lacaille*, au Pérou, différa d'une quantité presqu'inappréciable du mètre définitivement adopté, d'après le méridien, mesuré spécialement à cet effet, dont nous avons parlé ci-dessus. Pour tous les besoins pratiques et commerciaux, pour tous les besoins qui ne sont pas purement scientifiques et théoriques, les deux mètres ne font qu'un. La longueur du mètre définitif, légal, est d'environ 3 *feet* 3⅜ *inches*, des mesures américaines, ou 39.370091 *inches* du *yard* impérial de la Grande-Bretagne, exactement.

"Et maintenant, avant d'expliquer le système métrique, je dois, en historien fidèle, constater un fait relatif aux opérations trigonométriques faites en 1806 et 1807, qui nous ont donné le mètre définitif. Tous les savants reconnaissent aujourd'hui qu'il y avait erreur dans ces opérations,—que la mesure trouvée pour le méridien n'était pas scrupuleusement exacte,—et, en conséquence que le *mètre*, qui est déduit, tout en approchant de la vérité absolue plus près que le premier mètre provisoire, ne l'atteint pas tout à fait. Il est *un peu trop court*. La longueur du mètre provisoire était de $443\frac{400}{1000}$ lignes. Celle du *mètre définitif, légal*, est de $443\frac{296}{1000}$ lignes. Cette longueur, selon *Delambre*, serait trop courte de $\frac{32}{1000}$ d'une ligne ou peut-être de $\frac{26}{1000}$ d'une ligne seulement; et, selon *Puissant*, d'un peu plus. Toutes ces différences, sont nulles, excepté pour les besoins rigoureusement théoriques. Méchain lui-même a reconnu, depuis, ce qu'il cacha à la commission, savoir, que la latitude qu'il avait trouvée pour Barcelone, en 1806–7, ne fut pas très-*sûre*.

"Selon Bessel (*Astr. Nachr.* 1842), la distance comprise entre l'équateur et le pôle contiendrait 10,000,855 mètres (6210 *miles* + 1335 *yards*). Selon Puissant, cette distance serait de 10,001,290 mètres; et selon Chazallon, de 10,001,790 mètres (6211 *miles* + 5973 *yards*, mesures américaines et anglaises). Ainsi, la distance de 10,000,000 mètres, établie en 1806–7, comme celle de l'équateur au pôle, serait trop faible de 935 *yards*, selon Bessel; de 1410 *yards*, selon Puissant, et de 1957 *yards*, selon Chazallon. Les grandes triangulations faites dans les Indes (1832–42) donnent des résultats peu différents de ceux-ci: je le répète, pour tous les besoins du commerce et de la vie ordinaire, ces différences sont absolument nulles dans leur application au *mètre*.

"Nous avons ainsi obtenu le *mètre*, unité de la longueur ou des mesures linéaires, base sur laquelle est appuyé tout le système."

## (B.)

*Extract from* REPORT *of* SELECT COMMITTEE *of the* HOUSE OF LORDS *appointed to consider the Weights and Measures Bill (Session* 1855.*) Witnesses examined, George Biddell Airy, Esq., Astronomer Royal, and Joseph Whitworth, Esq., (7th June,* 1855.*)*

"95. *Lord Wrothesley* (to Mr. Whitworth).—You would concur with the statement in the Report as to our present arrangements for preserving the standards?

"Yes; but the standards are of no use where they are now lying. I tried to obtain a sight of one, but was unable. And no use is made of them.

"96. *Chairman, the Lord Privy Seal.*—Are they not accessible to the public?

"I went to the Exchequer Office, and could not get to see the one there. I also went to the Royal Society, and was told that I must obtain an order from the Council before I could see their copy.

"97. (To Mr. Airy).—We should like to hear any observations which you have to make on this subject.

"I will begin with Article 62 :—'The length standards pressingly require improvement. 'At present, there is but one length (the yard) represented in the Exchequer standard, 'and the apparatus provided for comparing it is so rude, that no engineer or ordinary 'workman, in any trade, requiring accurate fittings, would place confidence in it.' It is, I must say, for a yard measure, the rudest thing that I ever saw.

"98. But have you not made a new one?

"No.

"99. The one which this Bill authorizes is a new standard?

"That which the Bill authorizes is the standard for preservation: that to which we here allude is the standard for use, the secondary standard. The standard is compared there. Supposing a yard measure is brought there for comparison, it is put into what is called the bed, and if it does not rattle too much, it will do. What they have for comparison there is merely a brass bar, and it is put in and will rattle considerably. It is the roughest affair that I ever saw for a secondary national standard. Then Article 63 states :—'The balances for weighing ought to be replaced by balances of a more 'accurate construction.' I believe that I am quite correct in saying, that the balances in daily use at the Bank of England are probably ten times as delicate as those in the Exchequer Office. They are entirely inadequate to the wants of the country: 'the 'weights have not been verified for many years.' Then we say :—'The rude process of 'attesting the comparison of a standard of length or capacity, brought to the office for 'verification by an impression made by the blow of a hammer, ought to be discontinued 'from the present day.' Then in Article 67, it is stated :—'The indenture issued from 'the Exchequer on the examination of standards, appears to be useless.' And in Article 68 :—'It appears probable that the local standards are generally, even in reference to 'their lower pretensions to accuracy in a worse state than the Exchequer standards. 'Until the periodical comparison of local standards is enforced, it will be impossible to 'pronounce certainly on the magnitude of their errors. The balances of local inspectors 'are, probably, in all cases unfit for the examination of the weights used in sales of 'bullion. There is a great want of local standards, and especially of mural standards 'of length in the principal towns.' Now, those things attracted our attention, and the thing which we should propose, as preferable to any other course, for remedying those defects, is to make it a department under the superintendence of some competent person, as is stated in article 57, to which I will now refer :—'In the course of our inquiries as 'to the demand for standards and the state of the standard offices, we have been very 'strongly impressed with the inadequacy of the present arrangements to maintain the 'national standards in a state fit for the public wants, as regards either the sufficiency of 'number of the Exchequer standards, or the state of preservation of those standards, 'or the nature of the comparing apparatus and the methods used in their applications, 'or the provincial dissemination of copies of the standards, or the inspection and 'occasional comparison of all for the purpose of ensuring their accuracy. We see no 'remedy for this unsatisfactory state of things, except in the appointment of a permanent 'scientific officer, whose business it shall be to keep a constant watch on the state 'of the primary standards, the secondary Exchequer standards, the local standards, 'the equipments of the standard offices, the relations of British and foreign standards, 'and the state of the law generally as applying to standards, and to memorialize the 'Government from time to time, as occasion may arise, on any of these points.' There is no provision at present for bringing the state of these things to the knowledge of the Government, and it is only done on rare occasions, such as this, when the Houses of Parliament are burnt, or something like it.

"100. *Lord Wrothesley.*—On the Exchequer standard was not there an enormous blotch?

"There was in the Imperial standard.

"101. It was almost impossible to ascertain the centre of the comparing mark?

"Yes. This blotch had probably been produced by allowing the public to have too free access to the standard.

[Mr. Airy was a member of the Royal Commission, whose Report was issued in 1854 He was in favour of a *line* measure, while Mr. Whitworth preferred an *end* measure.]'

## (C.)

"From the experiments of Sir George Shuckburgh Evelyn, it was found that at the temperature expressed by 39° Fahrenheit, the height of the column of mercury in the barometer being 29.79 inches, the weight of a cubic foot of distilled water was 999.8066 ounces avoirdupois; and reducing this weight conformably to the table of the densities of water at different temperatures which has been given by Biot, it will be found that at a temperature expressed by 60° Fahrenheit, and when the height of the mercurial column is 30 inches, the weight of the cubic foot of water is 999.54 ounces. But in the Parliamentary regulations, which were made in 1825, a cubic inch of water is stated to weigh 252.458 troy grains, the temperature being 62° Fahrenheit, and the height of the barometrical column 30 inches; and 7000 troy grains are made equivalent to one pound avoirdupois; hence it follows that a cubic foot of water should weigh 997.136 ounces. Either of these numbers is sufficiently near 1000 to make it very proper that the last should be adopted for the specific gravity of water, since a change in the value of the avoirdupois ounce, which would be scarcely appreciable in the ordinary transactions of commerce, would render the ounce an accurate and convenient unit of weight, while the cubic foot constitutes the unit of volume."—(*Article*, "Specific Gravity," *Penny Cyclopædia.*)

## (D.)

The following table (see M'Culloch's Dictionary—article "Weights and Measures,") shows the comparative proportions of Imperial Liquid and Dry Measure deduced from the Standard Gallon, determined as before mentioned :—

| Weight of water. | Cubic Feet. | Cubic Inches. | Gills. | Pints. | Quarts. | Pottles. | Gallons. | Pecks. | Bushels. | Cooms. | Quarter. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 oz. | | 8.665 | 1 | | | | | | | | |
| 1¼lb. | | 34.659 | 4 | 1 | | | | | | | |
| 2½ | | 69.318 | 8 | 2 | 1 | | | | | | |
| 5 | | 138.637 | 16 | 4 | 2 | 1 | | | | | |
| 10 | | 277.274 | 32 | 8 | 4 | 2 | 1 | | | | |
| 20 | | 554.548 | 64 | 16 | 16 | 4 | 2 | 1 | | | |
| 80 | 1.2837 | 2218.191 | 256 | 64 | 32 | 16 | 8 | 4 | 1 | | |
| 320 | 5.1347 | 8872.763 | 1024 | 256 | 128 | 64 | 32 | 16 | 4 | 1 | |
| 640 | 10.2694 | 17745.526 | 2048 | 512 | 256 | 128 | 64 | 32 | 8 | 2 | 1 |

## (E.)

*Extract from* "A PLAN FOR A NEW GENERAL SYSTEM OF WEIGHTS, *as a Supplement to the Plan for the New Silver Coinage, published 22nd June,* 1816, *with additional Suggestions respecting the Currency of the Kingdom and an Abstract of the New Coinage Act, &c. &c. &c. By Henry Goodwyn. London: published for the author,* 1816."

Mr. Goodwyn recommends 10,000 grains to be adopted as the basis of the new pound weight, divisible into 25 ounces of 400 grains each, corresponding with the division of 25 shillings per new pound sterling in the money table of plan for the coinage. The division of 40 grains would correspond with one penny, and ten grains with one farthing. The farthing may be nominally divided into 10 grains, and then the pound sterling and pound weight will represent 10,000 grains each. The ounce may, however, be raised to 500 or 1,000 grains, unless it should be considered to retain the old ounce of 480 grains.

He proceeds :—"The existing gold coins of the guinea, half-guinea, and seven-shilling-piece, to be taken for the new pound sterling and parts thereof. The new silver coinage to be crowns and half-crowns, or pieces of 50 and 25 pence—shillings and half-shillings, or pieces of 10 and 5 pence. An additional piece of 2½ pence would be exceedingly useful, and the existing copper coins of pence, halfpence, and farthings, to continue in circulation (until a new copper coinage may be judged expedient), only raising their value ⅘ths of 1 per cent.—making the whole to be, the new pound sterling = 25 new shillings = 250 pence = 1000 farthings, and if the farthing is nominally divided into 10 grains, = 10,000 grains."

### "ADDENDA.

"This first thought or idea of a new general system of measures, conceived by the author since the copy for correction of his 'Plan for Weights' was returned to the printing office to be struck off, was in consequence of being informed by a friend, that a scientific gentleman had observed that the plan for weights by itself was incomplete and should be connected with a 'System of Measures' formed upon a basis taken from some natural standard. He therefore suggests the following hints, to be considered and improved upon by others :—

"Take a cubic vessel *(of gold, silver, or copper for the legal standard)*, to contain a quantity of water of a certain temperature, which shall be equal to any number of new pounds weight most convenient—say from 5 to 10 pounds, so as to correspond nearly with the existing measures. Then, let the contents of this cubic vessel be the new gallon measure of capacity, and let the dimension of one side of the cubic vessel be the new foot, or measure of length—thus acquiring as the standard for both weights and measures 'a cube of water,' which will be found as unalterable as the vibration of a pendulum or any other object in nature. The units of the new gallon and new foot to be divided decimally, or into 25 parts = 250 = 1,000 = 10,000, real or nominal, corresponding with the proposed subdivisions of the new pound sterling and new pound weight, to represent 10,000 grains each. And to simplify all the systems, the same denominations might be given to the division of the whole, viz., 'shillings' or 'ounces,' &c., &c., *instead* of different names for the divisions in each—if adopting the more simple denominations of units and decimals, should not be preferred."

"*London,* 13*th September,* 1815.

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## (F.)

(*Extract from* "PENNY CYCLOPÆDIA"—*article* BULLION.)

"Attempts have been made to ascertain the loss in the wear of coins which have been in circulation for various periods. For this purpose an experiment was made in July, 1833, when Lord Auckland was Master of the Mint, upon 1200 sovereigns and 1200 half-sovereigns, 300 of each denomination having been put in circulation in 1817, 1821, 1825, and 1829, respectively, and upon similar numbers of silver, half-crowns, shillings, and sixpences, which had been in circulation during the same number of years. The result of this experiment is given as follows :—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | GOLD. | | | | |
| 300 | sovereigns of 1817, which had been 16 years in circulation, had lost at the rate of | | | £0 | 8 | 10 | per £100 value |
| 300 | ditto | 1821 | 12 years | 0 | 9 | 1 | ,, |
| 300 | ditto | 1825 | 8 | 0 | 6 | 8 | ,, |
| 300 | ditto | 1829 | 4 | 0 | 3 | 5¾ | ,, |
| 300 | half-sovereigns | 1817 | 16 years | 0 | 16 | 4 | ,, |
| 300 | ditto | 1821 | 12 | 0 | 13 | 10 | ,, |
| 300 | ditto | 1825 | 8 | 0 | 13 | 6¾ | ,, |
| 300 | ditto | 1829 | 4 | 0 | 6 | 2 | ,, |
| | | | SILVER. | | | | |
| 300 | half-crowns | 1817 | 16 years | 2 | 7 | 7 | ,, |
| 300 | ditto | 1821 | 12 | 1 | 13 | 0 | ,, |
| 300 | ditto | 1825 | 8 | 0 | 16 | 11 | ,, |
| 300 | ditto | 1829 | 4 | 0 | 7 | 9 | ,, |
| 300 | shillings | 1817 | 16 years | 4 | 19 | 0 | ,, |
| 300 | ditto | 1821 | 12 | 2 | 18 | 5 | ,, |
| 300 | ditto | 1825 | 8 | 2 | 1 | 6 | ,, |
| 300 | ditto | 1829 | 4 | 0 | 8 | 11 | ,, |
| 300 | sixpences | 1817 | 16 years | 5 | 11 | 11 | ,, |
| 300 | ditto | 1821 | 12 | 4 | 1 | 5 | ,, |
| 300 | ditto | 1825 | 8 | 3 | 3 | 5 | ,, |
| 300 | ditto | 1829 | 4 | 1 | 8 | 7 | ,, |

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## (G.)

(*Extracts from* " PRACTICAL ANALYSIS OF THE COMPARATIVE MERITS OF £1. AND 10*d.* AS THE RULING INTEGER FOR A DECIMAL CURRENCY. By James Laurie.")

" Again, the vast stimulus which improved machinery, or the application of machinery, has given to productive labour, during the last twenty years especially, has not only lessened the cost of a variety of articles, but has actually so far reduced their value compared with a former period as to compel manufacturers to sell the goods in parcels or fixed lots (usually corresponding to the aliquot parts of a pound or a shilling, for the convenience of calculation), their minute value making it otherwise impossible to affix a price demonstrable by any even of our smallest coins. For instance,

" *Pearl shirt buttons* are sold as low as 2½*d.* per gross, or $14\frac{4}{25}$ for a farthing.

" *Agate, or porcelain shirt buttons,* at 13½d. per great gross, or 32 for one farthing.

" *Bone buttons* at 10½*d.* per great gross, or 41⅕ for a farthing.

" *Tapes* at 1½*d.* for 12 pieces, measuring 2½ yards each, being 5 yards for a farthing.

" *Cotton bobbins* at 1½*d.* for 12 pieces of 3 yards, or 6 yards for a farthing.

" *Sewing cotton on reels* at 2*d.* per dozen, being equal to 1½ reels for a farthing.

" *Sewing cotton in balls* at 1*s.* per lb. of 128 balls, being equal to $2\frac{66}{100}$ balls for a farthing.

" *Needles* 9*d.* per thousand (in 40 papers containing 25 each), being 27½ needles for a farthing

" *Pins* at 10*d.* per lb. of 16 ounces, put up in papers of ounces or half ounces, or about 40 pins for one farthing.

" With facts before us such as these, and which refer to only a few of the very numerous articles at the command of the public, in their constant traffic, it requires no arguments to establish the great truth, *that our coinage as it stands does not descend low enough for the wants of the great bulk of the community*; and for this evil the proposed decimal coinage, consisting of pounds, florins, cents, and mils, supplies no remedy, and leaves that important consideration altogether untouched. There can be no question that under the existing system of coinage for circulation, the public is exposed to much loss either by buying a larger quantity of a commodity than occasion requires, or submitting to pay a much higher price than any reasonable profit on the original cost of an article would justify.

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" Let us only examine practically in what way the necessaries of life would be obtainable by the poor under a decimal currency, and by comparison, which system of decimal coinage would be most convenient and attended with least loss.

" In the low neighbourhoods of London during the past and the present year, commodities have been sold in retail quantities at the following prices, and we give their equivalents in a decimal coinage, on the supposition that a coin representing 1 mil, or the 1000th part of £1.; or 1 per cent, or the 100th part of 10d.—is to be in some short period introduced.

| | | | Mils at 20*s*. per 1000. | | Cents at 10*d*. per 100. | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Equivalent. | Nearest coins. Mils. | Equivalent. | Nearest coin. Cents. | | |
| Jan. 1853, bread per loaf, | | 6*d*. | ·025 | ·025 | ·60 | ·60 | or | 6*d*. |
| Oct. „ ditto ditto | | 8½*d*. | ·035416 | ·036 | ·85 | ·85 | „ | 8½*d*. |
| Nov. „ ditto ditto | | 9½*d*. | ·039582 | ·040 | ·95 | ·95 | „ | 9½*d*. |
| Jan. 1853, coals per cwt. | 1*s*. | 10*d*. | ·091666 | ·092 | 2·20 | 2·20 | | |
| Jan. 1854, ditto ditto | 2*s*. | 4*d*. | ·116666 | ·117 | 2·80 | 2·80 | | |
| Feb. „ ditto ditto | 2*s*. | 8*d*. | ·133333 | ·134 | 3·20 | 3·20 | | |
| Potatoes (same period) per lb. | | 1*d*. | ·004166 | ·005 | ·10 | ·10 | „ | 1*d*. |
| | | 1¼*d*. | ·0052076 | ·006 | ·12½ | ·13 | „ | 1$\frac{3}{10}$*d*. |
| | | 1½*d*. | ·006250 | ·007 | ·15 | ·15 | „ | 1½*d*. |
| Tea (3*s*. per lb.) | ¼ oz. | ¾*d*. | ·0031246 | ·004 | ·07½ | ·08 | „ | $\frac{8}{10}$*d*. |
| Sugar (3½d. per lb.) | 2 oz. | ½*d*. | ·002083 | ·003 | ·05 | ·05 | „ | ½*d*. |
| Coffee (1*s*. per lb.) | ½ oz. | ½*d*. | ·002083 | ·003 | ·05 | ·05 | „ | ½*d*. |
| Candles (6*d*. to 8*d* per lb.) each | | 1½*d*. | ·006250 | ·007 | ·15 | ·15 | „ | ½*d*. |
| | | | £·470·8272 | ·479 | 11·30 | 11·31 | | |

" By this table it is clearly seen that, under the system advocated in the Report of the Parliamentary Committee, where the integer of the decimal is 20*s*., the poorer classes will lose at the rate of $1\cdot\frac{78}{100}$ or about 2 per cent., while under the system of 10*d*.—*i. e.*, 24 to the pound—they would lose only $\cdot\frac{008}{1000}$ per cent. : an almost imperceptible fraction, and not requiring consideration in estimating the comparative benefits of the two systems in their operations on the condition of the poor. By purchasing in small quantities the poor already lose on tea 33⅓ per cent.; on sugar 14$\frac{2}{7}$ per cent., on coffee 33⅓ per cent., and on candles 12½ per cent.; but were decimal coinage introduced with £1. as the integer, the additional penalty of nearly 2 per cent. would be rivetted on them without the possibility of escape, unless by the introduction of a decimal system of weights and measures, which certainly ought to be simultaneous with a decimal currency."

Mr. Minasi, in his paper read before the Society of Arts, in February, 1855, establishes the same principle.

## (H.)

*Extracted from the* " JOURNAL OF THE SOCIETY OF ARTS," *October* 5, 1855—*article* DECIMAL COINAGE.

" SIR,—May I request the favour of your inserting, as an addendum to my Westminster lecture the following tabular comparison between the number of figures required under the present system of accountancy and those of a decimal pound, based respectively on the *mil* and the *penny* to represent every sum of money as entered in the books of bankers, merchants, &c., ascending in pence—the lowest term employed in such accounts. It will be seen from an inspection of this table, that the plan recommended by the late Committee on Decimal Coinage presents a very undignified appearance as a '*labour-saving* scheme, in this view of the subject, beside the penny plan, or even that now in use :—

| All sums of Money rising evenly in Pence. | £ | s. | d. | Require in *present system* the following total numbers of Figures to express them | In the proposed system of £1 divided into 1000 *Mils.* | In any of the proposed systems based upon the *Penny.* | Advantage of *present system* over *Mils.* | Advantage of a *Penny basis* over *Mils* | Advantage of a *Penny basis* over present system. |
|---|---|---|---|---|---|---|---|---|---|
| From 1d to | 0 | 0 | 3 | 2 | 2 | 2 | 0 | 0 | 0 |
| " | 0 | 0 | 10 | 9 | 16 | 9 | 7 | 7 | 0 |
| " | 0 | 2 | 0 | 39 | 44 | 37 | 5 | 7 | 2 |
| " | 0 | 8 | 4 | 203 | 272 | 189 | 69 | 83 | 14 |
| " | 1 | 0 | 0 | 627 | 692 | 609 | 65 | 83 | 18 |
| " | 4 | 3 | 4 | 3393 | 3732 | 2889 | 339 | 843 | 504 |
| " | 10 | 0 | 0 | 8547 | 9332 | 8487 | 785 | 843 | 58 |
| " | 41 | 13 | 4 | 43973 | 47332 | 38889 | 3359 | 8443 | 5084 |
| " | 100 | 0 | 0 | 109347 | 117332 | 108889 | 7985 | 8443 | 458 |
| " | 416 | 13 | 4 | 539973 | 573332 | 488889 | 33359 | 84443 | 51084 |
| " | 1000 | 0 | 0 | 1333347 | 1413332 | 1328889 | 79985 | 84443 | 4458 |
| " | 4166 | 13 | 4 | 6399973 | 6733332 | 5888889 | 333359 | 844443 | 511084 |
| " | 10000 | 0 | 0 | 15733347 | 16533332 | 15688889 | 799985 | 844443 | 44458 |
| " | 41666 | 13 | 4 | 73999973 | 77333332 | 68888889 | 3333359 | 8444443 | 5111084 |
| " | 100000 | 0 | 0 | 181333347 | 189333332 | 180888889 | 7999985 | 8444443 | 444458 |
| " | 416666 | 13 | 4 | 839999973 | 873333332 | 788888889 | 33333359 | 84444443 | 51111084 |
| " | 1000000 | 0 | 0 | 2053333347 | 2133333332 | 2048888889 | 79999985 | 84444443 | 4444458 |

"Thus it will be seen, that the number of figures saved upon the sum of all figures below £100,000, by the use of decimal pence would be less than ¼ per cent.; while the additional figures in the pound-and-mil system would amount to about 4½ per cent. On smaller sums, such as may be supposed to be entered in the books of tradesmen generally, the sum of all figures below £100, would give a saving of a little more than ⅜ per cent. for the penny, and an increase of nearly 7⅛ per cent. for the mil system. On still smaller sums, representing the dealings of retail traders, the sum of all figures below £10 would give for the decimal pence a saving rather more than ⅝ per cent., and for the pound-and mil plan an increase of nearly 9¼ per cent.

Yours obediently,

Frederic James Minasi.

"*Parkfield House, Islington, September,* 1855."

## (I.)

### Sketch for a New Division and Subdivision of Monies, Weights, and Coins.

By Mercator. July, 1814.—*Pamphleteer*, iv. 171.

During the investigations of the Bullion Committee, and the discussions in Parliament on the subject of our currency, my attention was drawn to the *admirable and accurate new system adopted in France* in the division of their *moneys of account*, the assay of the coin, and the weights, each corresponding with the other in decimal subdivisions, and it occurred to me that the same was applicable without any inconvenience, and with infinite advantage in every respect, to our monies, weights, and coins, which I have endeavoured to elucidate by the following sketch; and as, in consequence of the Peace, we are approaching to the period when a new coinage will take place, this appears the proper time for taking up the subject, which could not have been brought forward sooner on account of the deranged state of commerce, and of our relations with the Continent.

It will be necessary first to consider *weights*. Our cwt. divided into quarters and pounds involves a most tedious, an uncertain operation throughout; and it is obvious that a hundred, or cwt. of 100 lb., is best adapted to the purposes of commerce. I would, therefore, propose to adopt the lb. of 16 ounces Troy, the same as is known or used in commerce in many countries under the name of Poids de Marc, Poids de Cologne, Poids de Amsterdam, &c. &c., with slight accidental variations, 100 of which compared to our 112 would be as 96 to 98, and thus make no material alteration in the ton weight, which if it consisted of 2000 lbs. Avoirdupoise, would be too small for the tonnage of ships, &c. whereas the ton of 2000 lb. of 16 oz. Troy, would be the same ton as in Holland, Hamburg, &c.

In order to correspond with the following decimal divisions and calculations, the pound (of 16 oz. Troy) to be divided thus—

Grains 1,000 = 1 oz.
„ 10,000 = 10 = 1 pound.

*Assay.*—Gold and silver to be represented—
Fine by 1000
Standard „ 900

*Money* of account 1000 = £1.

*Coins.*—Gold, 1000 = 1 pound. 500 = half-pound
Silver, 250 = crown. 125 = half-crown. 50 mil = shilling. 25 mil = sixpence.
Copper, 5 mil = penny. 1 mil = farthing.

*Coinage.*—10 lb. standard gold to be coined into 651 pounds
5 lb. ditto ditto 651 half-pounds
5 lb. standard silver to be coined into 84 crowns; 168 half-crowns; 420 50-mil; 840 25-mil.

being in proportion as 1 to 15½, which would establish the Mint prices of new standard coin.

| | Gold. | Silver. |
|---|---|---|
| Per ounce Troy . . . . | £4 1 4½ . . . . | £0 5 3 |
| „ Decimal ounce . . . | 6 10 $2\frac{4}{10}$, . . . | 0 8 $4\frac{8}{10}$ |

The expense of coinage is at present a charge upon the public; but the Mint receiving bullion at the rate of the coin, should deduct from the price a certain fixed rate for coinage, to be regulated by a tarif or scale for every degree from fine to ——

The present mode of buying and selling bullion at a price standard is liable to much objection, the operation of reducing to standard bars of various reports being most intricate and tedious. The better mode would be to form a scale for gold and silver from £72.3333 for fine gold, and from £4.6666 for fine silver, and thus for every degree worse down to ————, below which it is supposed the seller should be at the expense of refining his bullion before he could offer it for sale. The scale would be constructed thus, but more minutely, shewing the price of *every* degree from fine downwards.

| | Gold. | Silver. | |
|---|---|---|---|
| 1000 . . . | 72.3333 . . . | 4.6666 | Pounds per lb. of 16 oz. Troy.<br>10,000 decimal grains. |
| 950 . . . | 68.7167 . . . | 4.4333 | |
| 900 . . . | 65.1000 . . . | 4,2000 | |
| 850 . . . | 61.4833 . . . | 3.9667 | |
| 800 . . . | 57.8667 . . . | 3.7334 | |

The market price of bullion would be determined by — per cent. premium or discount on these prices, which would apply to every degree of fineness, than which nothing could be more simple.

£65.100 in gold coin, or } would contain 7,680 Troy grains,
4.200 in silver coin } or 10,000 decimal grains.
And as the French kilogramme is equal to . . 15,436 Troy grains.
It would be also nearly . . . . . . . . . . 20099 decimal grains.

and as the standard of French coin is the same as that proposed, and that their established proportion between gold and silver is as 1 to 15½, and that 1 kilogramme of gold is coined also into

155 = 20-franc pieces, or . . . francs 3100

1 kilogramme of silver into

40 = 5-francs, or 200 1-francs . . „ 200

This would establish a par of exchange between England and France at francs 23.69225 nearly per pound sterling.

*Accounts* would be greatly simplified, the money of account being divided into 1000 parts instead of 20 and 12, whereby all calculations are rendered tedious and difficult, and by adopting a quintal of 100 lbs. much tedious labour would be avoided, and greater accuracy obtained, with this advantage, that goods sold at per pound quintal would be a corresponding number of ten mils per lb., and *vice versâ*.

It must be obvious to every one who has hàd any experience of monies, accounts, &c. by decimals that they have the advantage of great dispatch and save much time, the benefit of which in this great commercial country would be incalculable.

There are various other points and arguments, political as well as commercial on this subject, which are not, however, necessary to be discussed at present; suffice it to say, that they are all in favour of the proposed alteration of the standard, &c. &c. which indeed must of necessity take place to enable government to resume the coinage, and also because our coin in its present proportions and relative values of Mint prices with those of the Continent, will be constantly drained as soon as issued. Therefore the absolute necessity of a new standard, &c. to restore the permanency of circulating medium in the legal coin of the realm.

Before I conclude I shall add another observation on the subject of weights.

The commercial weight in England was originally the same which I now propose, namely, the pound troy of 16 oz. or 7680 grains, which pound was afterwards reduced to 7600 grains, and the latter is now known as the *old* weight, and is still in use in Scotland. This is also the weight by which the assize of bread is fixed, the peck loaf weighing 16 lb. old weight, which answers to 17 lb. 6 oz. Avoirdupois. I mention all this merely to show the pound of 16 oz. Troy is not only that which is most generally known in Europe, but that it is also the old and legitimate weight of this country. It would be difficult to give any good reason why it was discontinued, and another substituted in every respect so inconvenient to ourselves as well as to foreigners in their dealing with us.

*London*, 1*st July*, 1814.

## (K.)

*Extracts from the* "Times."

"The important subject of the new silver coinage was, last night, also discussed in Parliament, and from what we could collect, it seemed to be the intention of Government, that the Mint price of silver should be raised from 5s. 3½d. to 5s. 9d. per ounce, and that about *two million and a half* sterling should be coined at that rate. *This, then, is an alteration of our legal standard*, which we do not mention as any objection to the scheme, but as a simple fact.

"It is an alteration, too, in the only *actual* standard; for of gold coin we have at present none. And if we had, yet silver—which is emphatically termed by Mr. Locke, 'the instrument and the measure of the commerce of mankind'—would be the real measure of gold, and not gold of silver; and it is an absurdity too gross for refutation, to state, that there can be two concurrent and fluctuating standards of any measure whatever. Now, if the standard integer of our money, viz., the shilling, be varied in quantity of silver which it contains, there is no longer any reason for restricting the quantity to the 68th or 70th part of a pound weight. Why not at once adopt the French integer, which they call the franc and which we may call what we please? Vast would be the benefit to commerce, vast indeed the convenience to individuals, if the same money substantially circulated in the two countries. We shall never, perhaps, have so favourable an opportunity for this assimilation as now that we are utterly destitute of all legal coin whatsoever and have resolved on altering our legal standard.

"This, however, is a matter of contingent utility. A subject of more immediate interest to our readers is the indemnity which is to be granted to the holders of the present base coin, and we must revert to what we have so often repeated—that it is contrary to all equity, that the loss should fall on the holders; for it is not a loss incurred, as has been argued, by their simplicity, but by the necessity in which they were placed by the measures of Government and the Bank. There is not a shopkeeper in London that must not be a loser by the proposed change, unless the burthen be thrown where the profit has for so many years rested—that is to say, on the Bank. There is no more obvious or general principle of law than that '*qui sentit, commodum sentire debet et onus*,' and it may with truth be said, that many hundred of honest, hard-working men, who have had no share in the profit at all, would individually feel the loss of 20s. or 30s. more than the Bank, which has profited 16 or 17 millions, would the loss of the whole base currency."—"*Times*," *May* 31*st*, 1816.

"Mr. Croker rose to express his satisfaction that there was now every probability of there being an issue of twenty-shilling pieces. He begged to take this opportunity of remarking, that the whole system of our coins was in the most irregular and unsatisfactory state. We had one measure for weighing our gold by carats, another for our silver by troy weight, and a third for our copper by avoirdupois. Again, the relative proportions of our different coins could not be ascertained, but by perpetually resorting to fractions. The measure now before the House would not remove these anomalies. It would, in fact, alter the relative values of every piece of coin in the realm. Was it not proper, then, he would submit, to settle, in the first instance, the relative proportions which they should bear to another, introducing the decimal system of computation? Why not imitate the example which the French had set us on the subject? It was true, the French were more easily able to establish their money system on scientific principles, because they were in the midst of a revolution; and it would be admitted, that, great harm as that revolution had done, it had done much good to their coinage. It might, however, be said with truth, that we were in a state of revolution in regard to the coinage of the country. We had, in fact, no regular coinage. The French had now excellent coin, though we have none. This being the state of things, he should regret deeply, if this opportunity were neglected of establishing our coinage upon just principles, when all other nations on the continent were assimilating their coinage to the decimal arrangements adopted by France. It did so happen, at the present moment, that the prices of gold, silver, and copper bore such a relation to each other as would easily admit of a new system of coinage being formed, on the decimal scale. It so happened, that if an ounce of gold were divided into five parts, each part would be worth twenty of the new shillings proposed to be coined, and according to the price of copper, each of these new shillings would be worth 10d. If the pound troy of silver were coined into eighty of the new shillings, each would be pretty nearly worth 10d. at the present moment. Here the hon. member entered into other calculations to show the facilities with which, in his opinion, the decimal system of coinage could be introduced at present. He had thrown out these suggestions, that they might be taken up by some gentleman of greater leisure and ability than himself. He was sorry that the present measure had been brought forward so late in the session, and confessed that delay would set the public mind afloat. But the inconvenience which might result from this would be insignificant, when compared with the advantages of placing our coinage on stable principles. We were now about forming a coinage that might last for a century, and it was certainly important that it should be carried into effect on just principles. He had ventured to throw out these suggestions from a strong feeling of public duty, and he hoped that other gentlemen would turn them in their thoughts for consideration in future stages of the bill.

"Mr. Croker said, in explanation, that the convenience of the decimal calculation had been already tried in Ireland. The silver coinage there in circulation consisted of ten-penny pieces, and there had been no difficulty in introducing them. He coincided with the hon. gentleman as to the inutility of anxious searches for some unit of measure. It was well known that the French took what they called a provisional unit for their meter and did not wait for the scientific measurement of an arc of the meridian."

"Mr. Baring.—For his part, he did not attach much importance to the introduction of the decimal calculation in regard to shillings and pence. If we had been to start for the first time with our currency, it would be the most eligible system; but it would take some years before the people were habituated to it, and, after all, the capacity of division by halves and quarters, which attended our shillings, was extremely convenient for the common purposes of life, which, upon the whole, was the best criterion of any system. A great convenience would, however, be gained by the introduction of twenty-shilling pieces. But the observations of the hon. gentleman, relative to the principles of a new coinage, did not seem applicable to the present question. The present measure went upon the principle of abandoning the intrinsic relative value of the silver coinage as compared with gold standard. On the one hand, the shillings were not to have too high an intrinsic value, so as to create a temptation to melt them down; and on the other, they were not to be so low as to give encouragement to coiners to imitate them. The whole of the system went to disregard the intrinsic value of the coin.

"Mr. Marryat. . . . We had been taught to keep our accounts in pounds, shillings, and pence, and no advantage could be derived from altering this system."—*"Times," June 8th,* 1816.

"In the debates that have hitherto taken place on the subject, nothing has been stated more clearly, or carried more obvious conviction with it, than that which Mr. Croker urged on the advantage of simplifying our system. Owing, principally, to the arguments of this gentleman, the absurd objections to the coining of twenty-shilling pieces were given up, and the whole house acknowledge the benefit of having a coin answering to our money of account without fractions. But why should we not follow up the principle of his reasoning? The relative value of all the coins of the realm must, at all events be altered. Why not at once adopt a system which will give us the *great advantage of a decimal computation throughout?* Mr. Croker threw out the suggestion of coining an ounce of standard gold into five twenty-shilling pieces, and a pound of standard silver into eighty shillings, of the value of 10d. each in copper; so that the ounce of gold should contain 100 shillings, or 1,000 pence.

"We have called this a mere suggestion; for there are several considerations to be taken into the account, in reducing it to practice. It was obviously not intended by the hon. gentleman, that the gold, the silver, or the copper should be equally and indifferently considered as measure of exchangeable value.

"It is singular that we have never been willing to learn the means of retaining a perfect coinage. Our money has been always debased, and coiners and exporters have made immense profits by it; while in France, a country so much less commercial, gold and silver money has for many years past been to be met with in great abundance, and the currency is in the best and purest state. The reason is plain. The French monetary system, which is dependent on that of weights and measures, is rational and simple; while our system—if system it can be called—has been one tissue of absurdities and contradictions."—"*Times*," *June* 11*th*, 1818.

"We have, in another part of our paper, given a short abstract of the different regulations as to *legal tenders* which have prevailed in this country for seven centuries and a half. By this it will be seen that *gold* never has been an exclusive measure of value in England; that silver has been so at certain periods; but that, in fact, there have always been—and still will be, if the proposed law be carried into effect—very great confusion in this respect.

"With all this confusion, it is true, our power and wealth have considerably increased, but certainly not by means of the confusion.

"On the contrary, the want of one simple exclusive measure of value has cost the nation immense sums, and occasioned, from time to time, the most distressing hardships on the lower classes. It betrays a gross and lamentable ignorance of the subject, to talk of the advantages we have reaped since 1774, by making gold the standard of value; for, in the first place, it has not been such standard; and secondly, we have, since that period, had at least *forty millions of guineas* withdrawn from circulation, for want of a national system of money.

"Again and again, do we most earnestly call on the Legislature to cause this subject to be inquired into by persons of science, and not sacrifice a million of money to the upholding the credit of the late Lord Liverpool's pamphlet.

### LEGAL TENDERS.

| | | | | | |
|---|---|---|---|---|---|
| 1. | Period beginning with | | William the Conqueror | 1006 | Silver exclusively. |
| 2. | Ditto | ditto | 41 Henry III. | 1256 | Silver and gold.<br>Equally one, stat. 19 Hen. VII. c. 5. |
| 3. | Ditto | ditto | 15 Car. | 1663 | Silver exclusively. |
| 4. | Ditto | ditto | 24 Car. II. | 1673 | Silver generally.<br>Copper under 6 pence. |
| 5. | Ditto | ditto | 3 Geo. I. | 1717 | Silver generally.<br>Gold generally.<br>Copper under 6 pence. |
| 6. | Ditto | ditto | 14 Geo. III. | 1774 | Silver under £25 by tale, and above £25 by weight.<br>Gold generally.<br>Copper under 6 pence. |
| 7. | Ditto | ditto | 23 Geo. III. | 1783 | Gold generally.<br>Silver generally.<br>Copper under 6 pence. |
| 8. | Ditto | ditto | 37 Geo. III. | 1797 | Gold generally.<br>Silver generally.<br>Copper under 12 pence.<br>Bank notes to tax-gatherers generally, and to other persons *sub modo*. |
| 9. | Ditto | ditto | 38 Geo. III. | 1798 | Gold generally.<br>Silver under £25 by tale, and above by weight.<br>Copper under 12 pence.<br>Bank notes as before. |
| | Proposed regulations | | | 1816 | Silver under 42 shillings.<br>Gold generally.<br>Copper under 12 pence.<br>Bank notes as before. |

"*Times*," *June* 22*nd*, 1816.

"Now it is very desirable that our principal silver coin should admit of a decimal division. It is equally desirable that it should coincide in intrinsic value with the principal silver coin of France, about to be adopted in the Netherlands, and daily spreading in commercial accounts over all Europe; but it so happens that this latter coin (the *franc*) contains within a small fraction 70 grains of pure silver, Troy weight; and if we should ever adopt the French system of weights and measures, it would be easy to correct the fractional difference, so as to make the franc exactly equivalent to the English *tenpenny-piece.*

"As our former shillings, of the legal value of twelve-pence, have wholly disappeared (our present shilling not being, in fact, worth nine-pence), it would be desirable to give to the new tenpenny-piece the name of a *shilling,* and call twenty of these shillings a *pound.* Thus the common people would still reckon by pounds, shillings, pence, and farthings, with the sole difference of adding up the pence table by ten instead of twelve." "*Times,*" *June 25th,* 1816.

"It has been already stated, that by coining shillings at tenpence, containing 70 grains of pure silver we should have an integral unit of account of the same for all practical purposes, as in France and the Netherlands. We should also deviate less from the legal measure of value in silver which has existed from the time of Queen Elizabeth than the coinage recommended by Lord Liverpool does! for Queen Elizabeth's standard is estimated by Locke at $7\frac{1}{3}$ grains of pure silver to a penny, whereas Lord Liverpool's is only after the rate of $6\frac{8}{11}$th grains. We should further have the advantage of decimal division, and yet retain the power of dividing our shilling into halves, quarters, and eights, by means of the representative copper coins. This latter circumstance of divisibility into halves, quarters, and eights, is usually urged as a recommendation of the duodecimal division of the shilling, though, in fact it amounts to very little; for articles which require minute subdivision in value do not always proceed from a shilling as the integer. When they do, it is a merely accidental coincidence, and deserves little consideration; whereas the superior facilities of decimal addition, subtraction, multiplication, and division, is an important benefit in all matters of account, however great or small their magnitude may be.

"It is recommended that 20 of the *new* shillings should be called a *pound* principally on account of the habit which people have acquired of reckoning 20 shillings to the pound, and, indeed, in the introduction of a new system, the facility with which it adapts itself to pre-acquired habits is no small recommendation. Besides, if it should hereafter be thought better to call 10 shillings or 100 pence a pound, that alteration might easily be carried into effect after the public had become fully acquainted with the new coins, then a shilling (and consequently a pound or 1000 pounds) must be taken in legal language to mean a determinate quantity of pure silver fixed by law and ascertained by the coinage stamp," &c.—"*Times,*" *June 28th,* 1816.

*Extracted from* "HANSARD'S PARLIAMENTARY DEBATES," *Feb. 25th,* 1824.—DISCUSSION ON DECIMAL SYSTEM OF ACCOUNTS AND COINAGE.

"Sir JOHN WROTHESLEY rose to submit to the House the motion of which he had given notice, namely, to inquire '*how far the coin of the realm could be adapted to a decimal scale.*' His apology for trespassing upon the attention of the House, must be the strong conviction which he felt of the necessity of the measure. The House must be aware, that the interference of the Legislature was necessary to address the Crown upon a question of this kind; for the control of the currency was the prerogative of the Crown. It had been said by the great commentator on the laws of England, Mr. Justice Blackstone, that 'as money is the medium of commerce, it is the king's prerogative, as the arbiter of domestic commerce, to give it authority or make it current. The denomination, or the value for which the coin is to pass current, is likewise in the breast of the king, and if any unusual pieces are coined, that value must be ascertained by proclamation.'

"The measure, then, which he was about to propose, could not be carried into execution without an address to the throne, if, after mature deliberation, the House should consent to his proposition—without which deliberation he should not presume to ask their assent. It must be manifest to the House, that this measure, if adopted, must be carried into execution *at the same hour and moment, or a great confusion must ensue throughout the country.* A measure of this nature had been proposed some time back. He had not then the honour of being a member of the House; but from the best information he could procure, he understood that an ounce of gold being worth 99s., it was proposed to coin it into five pieces.

"The hon. baronet, after a few remarks which could not be distinctly collected in the gallery, proceeded to remark, that after all the experience which he had before him, of the effect of the recent changes in the currency, considering the distress which it occasioned on the one hand, but, on the other, the immense benefit it had produced to public credit—if the measure were again to be brought before the House, with all the experience of the past before him, he should still give it his decided approbation. No one, then, could think, that he had the slightest intention to propose any alteration. On the contrary, he was most desirous that the currency should now remain on what he believed was a solid and durable basis. Neither was it his intention to propose any alteration in the gold or silver coinage, which maintained its currency in a manner essentially beneficial to the commercial interests of the country. The subject might require more authority than he possessed, if it could be at all considered a visionary scheme by many. Those who now heard him were aware *that a similar* system had been acted upon for the last thirty years in France—a circumstance which was of some importance, when they considered to how many countries France had extended her conquest, and the anxiety on the part of that country to become acquainted with the coinage of different countries of Europe. In America, too, the system had been introduced, and it was even extended to the ancient kingdom of China. It could not, therefore, be considered a visionary plan. The *innovation, and the only one, which* he proposed was, that the system of computation should, from a period to be determined, be conducted on simple arithmetic and not on compound—which should rather be called complex arithmetic—as was now the case. The very system recommended itself from its simplicity. At present there were four denominations of coins in payment, namely, pounds, shillings, pence, and farthings. He should propose that three denominations should be substituted, and these should consist of pounds, *double shillings*, and farthings. In order *to bring up* the latter denomination to admit of decimal calculation, he should propose, *that a value of four per cent. should be added (!)* The value of the penny at present, according to the papers on the table, would be, with the farthing raised four per cent. in value, 1.696, or, in other words, in one hundred pounds of copper money, £42 8s. would be raised to £44 2s. In this way, 100 farthings would make a *double shilling*, and 10 double shillings, or 1,000 farthings, would amount to a pound, and pounds would be converted arithmetically into farthings, or farthings into pounds, by simply adding or subtracting three ciphers to the right hand. The *convenience* of such a mode of *keeping accounts* could not be doubted, and it had been adopted in France for thirty years (!) *Of course, it would be necessary, to prevent inconvenience, that it should be carried into effect at the same moment all over the kingdom.* This might easily be accomplished by fixing some day for its absolute commencement, and enacting that up to that appointed day, all transactions should be in the old style. The hon. baronet concluded by moving, 'that an humble address be presented to his Majesty, that he will be graciously pleased to direct inquiries to be made for ascertaining the best mode of adapting the coinage of the realm to a decimal scale.'

"Mr. Wallace did not deny that there were advantages attending the system proposed by the hon. baronet; but whilst he made that admission, he was not prepared to assent to his propositions, believing that the inconveniences that would inevitably follow the change would be very great, and of a character that the expected benefits would not compensate. Besides, it was plain, that whatever were the defects in the theory of our present system, it had been so long in practice and the people were so habituated to it, that very little inconvenience was actually experienced. Nothing could be more correct than the course which the hon. baronet had pursued. It was, undoubtedly, the prerogative of the king, to take charge of the coinage; but the very motion of the hon. baronet, tending, as it did, to create doubts and to leave the public mind in a state of uncertainty, constituted an objection. The subject of decimal calculations had been frequently before the house. It had been introduced at the time of the new coinage. It had its advocates; but he must say, that there were opposed to the system some whose authority in questions of this nature stood very high in that House. It was most true that the system had been adopted after the revolution in France; but the hon. baronet would recollect, that it was adopted when there was an overthrow of every previous system, and when no existing interests or propositions were to be contended with. It had, doubtless, the merit of uniformity and facility; but *habit and usage had given an equal facility* in this country to the system that prevailed. Besides, there was a great objection to the proposition, when it was recollected, that such an alteration must principally affect the *very description of persons who from their situation in life, carrying on their dealiug in copper money, would feel the alteration and could not be made sensible of the benefit*. Adverting to the difference in the currency of England and Ireland, he acknowledged that it was a very serious inconvenience, intimated that it was his intention to propose some measure on the subject, and expressed his hope that at some future period the coin of the two countries would be assimilated, as well as their affections.

"Mr. Hume, adverting to the Committee which sat in former years, of which the hon.

member for Bodmyn was the chairman, wished to know if their labours had terminated in any practical result?

"Mr. **Davies Gilbert** replied, that the question of weight and measure alone had been considered by the Committee, but that of money had never come before them.

"Mr. H. **Parnell** expressed his satisfaction at what had fallen from the right hon. Master of the Mint, with reference to the coin of Ireland. He had himself given notice in the last session, that he meant to move leave to bring in a bill on the subject; but he most cheerfully resigned the undertaking into the hands of men much more competent to do it justice. Unquestionably, nothing could be more pregnant with inconvenience and injury than the present inequality of the coin of the two countries.

"Sir J. **Wrothesley** concluded not to press his motion to a division, though he trusted that the young members of the House would live to see the principle of his measure carried into effect. The motion was negatived."—p. 450.

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"The *experiment* made by Congress in 1786, by declaring that there should be one currency of accounts and payments throughout the United States, and that its parts and multiples should be in a decimal ratio—has obtained such general approbation both at home and abroad, that nothing seems wanting but the actual coinage to banish the discordant pounds, shillings, pence, and farthings of the different States, and to establish in their stead the new denominations."—*Jefferson's Report on Money, Weights, &c.*, 1790, quoted from *Bowring's Decimal System*, 58.

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### INTRODUCTION OF THE DECIMAL SYSTEM OF COINAGE INTO THE UNITED STATES OF AMERICA. By Mr. John Quincy Adams.

"At the close of our war for independence, we found ourselves with four English words—pounds, shillings, pence, and farthings—to signify all our money of accounts. But though English words they were not English things. They were nowhere sterling, and scarcely in any two States of the Union were they representatives of the same sum. It was a Babel of confusion by the use of four words. In our new system of coinage we set them aside. We took the Spanish piece-of-eight, which had always been the *coin most current* among us, and to what we had given a name of our own— a *dollar*. Introducing the principle of decimal division, we said a tenth of our dollar shall be called a *dime*, a hundredth part a *cent*, and a thousand part a *mille*. Like the French, we took all these new denominations from the Latin language, but instead of prefixing them as syllables to the generic term dollar, we reduced them to monosyllables, and made each of them significant by itself without reference to the unit of which they were fractional parts.

"The French, themselves, in the application of their systems to their coins, have followed our example, and assuming the *franc* as their unit, call its tenth part a *deceme*, and its hundredth a *centime*. It is now nearly *thirty years* since our new money of account, our coins, and our Mint have been established. The dollar under its new stamp has preserved its name and circulation. The *cent has become tolerably familiarized to the tongue* wherever it has been made by circulation familiar to the hand. But the *dime* having been seldom, and the *mille* never presented in their material images to the people, have remained so utterly unknown, that now when the recent coinage of *dimes* is alluded to in our public journals, if their name is mentioned, it is always with an explanatory definition to inform the reader they are ten-cent pieces; and some of them which have found their way over the mountains, by the generous hospitality of the country, have passed for an eighth instead of a tenth part of a dollar. Even now, at the end of thirty years, ask a tradesman or shopkeeper in any of our cities what is a *dime* or a *mille*, and the chances are four in five that he will not understand your question.

"But go to New York, and offer in payment the Spanish coin, the unit of the Spanish piece-of-eight, and the shop or market man will take it for a shilling; carry it to Boston, or Richmond, and you shall be told it is not a shilling, but nine-pence; bring it to Philadelphia, Baltimore, or the city of Washington, and you shall find it recognized for an elevenpenny-bit; and if you ask how that can be, you shall learn that the dollar being of ninety pence, the eighth part of it nearer to eleven than to any other number, and pursuing still further the arithmetic of popular denominations, you will find that half eleven is five, or at least that the half elevenpenny-bit is the fivepenny-bit; which fivepenny-bit at Richmond shrinks to four-pence halfpenny, and at New York swells to sixpence; and thus we have English denomination most absurd by diversity applied to Spanish coins, while our own lawful established *dime* and *mille* remain to the great mass of the people among the hidden mysteries of political economy—state secrets."—*J. Q. Adams' Report*, 1821, p. 55, 56, quoted also from *Bowring's Decimal System*, 91.

## (L.)

*From the* " MONEY ARTICLE" *of* " THE TIMES," *May 3rd*, 1855.

The annexed reasons against the pound being adopted as the integer of a system of decimal coinage, have been put forth preparatory to the approaching discussion of the question in Parliament. Their insertion is desirable from the fact of some of the habitual advocates of the decimal system having manifested a tendency to intolerance whenever the superiority of the pound has been attempted to be questioned, which has prevented this side of the question from being fully heard :—

1. " The expediency of introducing a system of decimal coinage into the United Kingdom is allowed to be a good idea, particularly if introduced simultaneously with a decimal system of weights and measures. But a decimal coinage, with £1. as the unit, is another idea altogether, and if forced on the country without due consideration may become a serious evil.

2. " The objections to the pound sterling being adopted as the unit of account appear insuperable, because, as it requires three decimal places to express an equivalent value to our present farthing, it becomes unwieldy in calculations where the prices of commodities are small.

3. " By our present mixed system we can arrive easily at correct results by a process of mental calculation familiar to every clerk or *employé* in business, without the necessity of putting pen to paper for the purpose.

4. " By the proposed system, with £1. as the unit where the price of an article is small while the quantity is great, mental calculation, unless in the rare instance of gifted persons, is wholly out of the question.

5. " At present, numerous articles are sold at 8ths, 16ths, and 32nds of a penny ; the nearest equivalents to these values in the thousandths of one pound are ·0005, ·00025, ·000125. It must of necessity require great labour to obtain a result with so many decimal places, which result could not be represented conveniently in an invoice ; but when the amount of such invoice came to be posted in the ledger, a certain portion of the value of the articles would be lost, because, although there are three decimal places, there is no provision made for a lower value. The same equivalents represented in the decimals of tenpence as the unit, are ·01¼, ·00⅝, 00 5/16, fractions so simple in their relative values as to offer no difficulty in addition, and such fractions would continue to be used in such decimal accounts because they are definite and capable of notation, but they could not be made available in the decimal of one pound, because indefinite, and consequently incapable of notation.

6. " The tenpence, as the ruling unit of account, as well as the integer of a decimal coinage, possesses many advantages over the pound. It comprehends every existing coin, and displaces none ; it descends by only two decimal places to a value 2½ times smaller than our present farthing, while in its ascending relations it represents large values with a smaller number of figures than can be shown either by our present mixed system, or by the decimals of one pound.

" For example, the price of gold is a value fixed by law, and as it cannot be imagined that any enactment with respect to a decimal coinage will disturb the standard of value, it may be safely taken as a test of the comparative merits of the mixed and decimal systems

| | |
|---|---|
| By *£ s. d.* we say the price of standard gold per Troy ounce is | £3 17 10½ |
| Decimally stated, by the pound unit . . . . | £3·89375 |
| Decimally stated, by the tenpenny unit . . . . | 93·45 |

7. " This is a fixed and unalterable quantity. But let us take ordinary transactions. If we are required to divide £100 between any number of persons under 10, the result will be as under :—

| | £ | *s.* | *d.* | Decimal of £1. | Decimal of £10*d.* |
|---|---|---|---|---|---|
| To each of 3 persons | 33 | 6 | 8 | 33.333· | 800 |
| „ 6 „ | 16 | 13 | 4 | 16.666· | 400 |
| „ 7 „ | 14 | 5 | 8½+ | 14.28571· | 342.85 |
| „ 8 „ | 12 | 10 | 0 | 12.500· | 300. |
| „ 9 „ | 11 | 2 | 2½+ | 11.111· | 266.66 |
| The totals are | £87 | 17 | 11 | 87.895 | 2109.51 |

"This operation may be taken as a fair example of the ordinary transactions in common life, and if we compare the results, we find that—

| | |
|---|---|
| The number of figures in £ *s.* *d.* (exclusive of fractions) is | 27 |
| By decimals of £1 (exclusive of decimals after 3 places) is | 30 |
| By decimals of 10*d.* exclusive of decimals after 2 places) is | 25 |

8. "By this operation, it is evident that a tenpenny unit is the most advantageous, not only because it requires a smaller number of figures to represent a result (and consequently, a less amount of labour to produce it), but because that result is exact, while in the instance of the pound unit all decimals after the third place must be omitted.

9. "The lowest decimal of 10*d.* is $\frac{1}{10}$th of 1*d.*, while the mil, the lowest decimal of £1, is $\frac{24}{100}$ths of 1*d.*, or 4 per cent. only smaller than our present farthing—that is, the comparative value of the cent to the mil is as 10 is to 24.

10. "A small denomination of coin is of great advantage to the poor, as there is no coin so small that cannot command an equivalent in some commodity. This applies more especially to food. The public derive no advantage at present from any fall in the price of flour under 2*s.* a sack, as there is no coin smaller than a farthing to represent it. If the unit of our coinage were 10*d.*, every reduction of 20*d.* in the sack of flour would be nearly 3 cents off the quartern loaf. To accomplish this would be the very perfection of legislation.

11. "The advocates of £1 as the unit are governed by its supposed traditionary qualities, and by the pound being a fixed measure of value. This is purely imaginary on their part. The pound, as its name implies, was originally a definite weight of fine silver, and, for 300 years after the Conquest, was coined into 20 shillings. Since that period it has changed in value no less than seventeen times, and the pound sterling, which at first contained 4995 grains of pure silver, is now reduced to 1614¼ grains only. So also with gold; its equivalent to silver, when the gold coinage, in the year 1344 (18th Edward III.), was introduced, being determined at 408 grains of pure gold (nearly) in the pound sterling, now contains 113 grains only! During the same period, that same sterling pound of gold has changed in value not less than twenty times.

12. "What are the decimals of a pound? A system which, if made the basis of a decimal coinage, would destroy those laws relating to penny postage, receipt stamps, and innumerable other matters in which the penny is the fixed legal measure; laws which have conferred great advantages on the social condition of the people, but which would remain wholly untouched by the tenpenny unit for a decimal coinage.

13. "The advocates of the pound desire a gold unit, on the ground that it represents a large value; the interests of the country demand a silver unit, because it represents a small value. But the latter for moneys of account need not necessarily displace the former. On the contrary, the sovereign will still continue as a gold coin, but be divisible into twenty-four as well as twenty parts, while the introduction of a gold coin representing twenty-five tenpennies (or £1. 0*s.* 10*d.*) would meet all the objections raised by the advocates of the pound.

14. "A system of decimal coinage, with tenpence as the unit, would avoid the displacement of a single existing coin.

15. "Any system of decimal coinage to be introduced under the authority of Parliament ought to be made simultaneously with a decimal system of weights and measures, to be really beneficial to the people. To adopt one pound as the unit would effectually interfere with the convenient operation of such a change, because such unit would be out of proportion to the comparative values of commodities, while the unit of tenpence would materially assist the common transactions of the people, as being more on an equality with such commodities in the ordinary wants of life.

16. "Foreign exchanges would be greatly facilitated by the introduction of a tenpenny unit, as it would harmonize more closely to the ruling coins of other countries. The decimals of one pound would effect no improvement whatever in this respect.

17. "In conclusion, if these objections are well founded, the introduction of one pound as the unit of decimal coinage would never be recognized by the people in matters of account, as in its operation it would be found to be impracticable, owing to the immense increase of labour which it must of necessity occasion where the prices or values of commodities are so small as not to be expressed unless by a decimal of five places; and it is humbly conceived that any theory under the guise of improvement, of so important a nature as regards the social interests of the people, but which no popular necessity has called for, ought to possess very powerful reasons for adoption to entitle it to command the attention of Parliament.

"It has been stated that already a majority of the House of Commons is in favour of that theory, and that decimal coinage with one pound as the unit must shortly become the law of the land. It is to be hoped this statement is the result of a sanguine imagination, and that any resolution involving considerations of so important a character will meet with that deliberation which Parliament has always devoted to questions affecting the social and trading relations of the country."

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Professor DE MORGAN, on behalf of the Decimal Association, published the following, addressed to WILLIAM BROWN, Esq., M.P.:—

"REPLY TO STATEMENTS IN FAVOUR OF A TEN-PENNY UNIT.

"*University College, London, May 5th*, 1855.

"MY DEAR SIR,—I presume, from the part of the paper in which they appear, that the remarks in the City Article of the *Times* of the 3rd of May represent the views of the best opponents to the Pound Decimal System which can be found in the commercial world. It is at least satisfactory to deal with arguments which assert something definite about our plan, and which pretend (to some extent—I wish it were more) to produce instances against us. Our opponent in this case has not by any means a perfect understanding of our plan; but what can we do better than answer him? There is no use in waiting for opponents who do understand us. As fast as any persons come to comprehend us, they are sure to join us, except only in the cases in which they are haunted by the idea of assimilating coinage all the world over, a proposal which unites the *millenial* and *decimal* systems.

"The advocates of the pound sterling have promoted public discussion in many Public Societies, and have encouraged in every way the attendance and opposition of those who think differently. No side of any question is free of those who manifest a tendency to intolerance.

1. "No change in commercial matters has any chance of introduction without much consideration. We do not propose to force £1 as the (highest) unit; we take £1, because we find it to be the established (highest) unit. It is our opponent who would *force* a unit on the country: the new tenpenny (highest) unit is his, not ours. We agree with our opponent in forcing (by argument) a decimal system,—he wants to force more than we do.

2. "It does not require three decimal places to express an equivalent to a farthing. Nobody is bound to write ·001 for our mil, any more than he is bound to write £0 0s. 0¼d. for a farthing. Where he says ¼d., we can say 1m., and we are a figure and a scratch on the right side of him. Our calculations are very unwieldy, when our opponents have to set them forth: let them exhibit *theirs*, and we are ready to put *ours* side by side. This they have always avoided: we know why, and when they please we will show why. But, that this may be done without possible imputation of unfairness, they must choose their own instances and their own methods.

3. "This we deny, except so far as it is practicable in both systems. And further, we assert that our mental means are superior to those of the ordinary system; thus £1 6fl. 3cts. 2m. is 1632 mils: how many pence are there in £1 17s. 9d.? If some of these mental processes had been produced, I would have pointed out parallel instances in the decimal system.

4. "Not unless decimalists be forbidden to think of any unit except the pound. The *florin*, the *cent*, the *mil*, are our subordinate units, just as the *shilling*, the *penny*, the *farthing*, are the subordinate units which facilitate our opponents' calculations. We do not contend for £1 as *the* unit, but for £1 as the *highest* unit. The decimal system makes passage from one unit to another much more easy; but it does not bind us to think in terms of one unit when another would be more convenient. We intend, with or without permission, to remember that two cents and three cents make five cents, without remembering, unless we see reason, that the cent is the hundredth of the pound. It is no small compliment to our system, that our opponents think us incapable of any unit except the pound: and it arises from the excessive simplicity of the connexion between our different units. We are not bound to walk in one field for ever because we have levelled all the fences: this we did precisely that we might more easily pass out of one into any other.

5. "Articles are not sold at 8ths, &c., of a penny; but masses of articles are sold at 8ths, &c., a-piece. It will be perfectly lawful, in posting, to write ⅛m., ¼m., &c., in the description. When the totals are entered, a portion of the value will be lost; but what becomes of the fractions of ¼d. now? We have much better means of writing down fractions of a mil than exist in the present system. And we have the present system too, when we please. We can describe the price as ·001¼ as easily as our opponent can use ·01¼. He introduces ¼, ⅝, &c., into his own *decimal* system, and assumes that we cannot do the same in ours. And further, our opponents forget that fifths and tenths would become more common. If fourths, &c., continue to be used, we can show that the

calculation of amounts will be much more easy than at present. Let our opponents try us with a few questions worked their own way.

6. "The tenpenny unit 'comprehends every existing *coin* and displaces none?' It displaces both the shilling and the pound; neither of which can be coins in a decimal system of which tenpence is the ruling unit. There is a confusion here between displacing the *sums* and displacing the *coins*. A shilling would exist under a tenpenny system as 1·2; but it could never be a coin. All parties are agreed that the coinage must agree with the system of accounts. With respect to the smallness of the tenth of a penny, which is urged as an advantage, we know that Government failed to introduce the half-farthings: people would not have them; it may fairly be presumed they did not want them.

"In the example, £3 17s. 10½d. is given as a 'large value.' But it is not uncommon to think of such sums as £50, £75, and even £100; that is, in tenpences, 1,200, 1,800, 2,400. How could any one persuade himself that large values contain fewer tenpences than pounds? If the opponent would deal, I would gladly buy any number of pounds he pleases, with any smaller figure of tenpences which he pleases: nay, to encourage genius, I would even give him a whole tenpence for every pound.

7. "I must remind you, that I criticise these observations only because they appear in an important part of the *Times*. I am satisfied that this arithmetic is not written by the authority who does those intricacies by which it appears that the Mint price of gold is ·011 per cent., or otherwise, dearer in London than in Paris. It is a feature of our case, that almost all our opponents show incapacity for clear thought and clear expression in arithmetic. What a state is exhibited, when such an *imbroglio* as we here see is honoured with a prominent place in our most widely-circulated journal; and what an excellent reason for a better system of arithmetic! This 'fair example of the ordinary transactions in common life,' shows 'how to divide £100 between any number of persons under 10,' by distributing £87 17s. 10d., reserving £12 2s. 2d. as the arithmetician's commission upon the transaction. And he deserves it: for, though he has taken care of himself, yet he has given to each of three persons £33 6s. 8d., to each of six £16 13s. 4d., and so on. Perhaps I am wrong in saying that £12 2s. 2d. is the whole of his commission; he may by his own inconceivable management, have put five or six thousand pounds in his own pocket. Perhaps this feat is done by the help of small pounds which are lowered in figure by being counted in tenpences. However it may be, I will confine myself only to the addition.

"By selecting aliquot parts of £100, or of 2400 tenpences, our opponent has managed to avoid his own decimals in three out of his five instances. He has also taken it for granted that, in order to represent the present system, our decimals are to be carried beyond mils. Now, we well know that in a week after the change, no one would break up a mil to secure any increased nearness to the old pence and farthings; and we also know that in comparing old things with new, no one would value the fraction of a farthing in any sum which has to be added to other sums. I now make a certain division of £200. 0*s*. 10*d*. among five persons without charging commission:—

| £ | *s*. | *d*. | Decimals of £1. | Decimals of 10*d*. |
|---|---|---|---|---|
| 41 | 17 | 2¼ | 41·859 | 1004·625 |
| 28 | 7 | 11½ | 28·398 | 681·55 |
| 62 | 1 | 4 | 62·067 | 1489·6 |
| 38 | 11 | 6¼ | 38·576 | 925·825 |
| 29 | 2 | 10 | 29·142 | 699·4 |
| 200 | 0 | 10 | 200·042 | 4801·000 |

Each sum is translated into our system to the nearest mil. The number of figures required is,

| | |
|---|---|
| In the common system | 36 |
| In decimals of £1 | 36 |
| In tenpences | 34 |

"Farthings in every sum would have made these numbers 42, 36, and 39. The average number of figures requisite to express any sum under a pound, to the last farthing, is,

| | |
|---|---|
| In the common system | $4\frac{1}{8}$ |
| In decimals of £1 | 3 |
| In tenpences | $3\frac{7}{12}$ |

"In the last case, we suppose that tenths of pence are coined, as proposed.

8. "The fact stated is not correct, as above shown. Nor is the result more exact; for, if decimals of a pound were introduced, we should think of mils as we now think of

farthings. We should not always be translating from the old system. Even in the opponent's own addition, two sums are not exact, and are marked + to signify that a fraction of a farthing is wanting. No one, except one of our opponents with a bias arising out of the necessity of his position, imagines that after the farthing has become a mil in people's exchanges, it would remain a farthing in their heads.

9. "All is right up to 'that is,' for which read 'that is not.' The cent is to the mil as 10 to 1; he means *his own* cent, and *our* mil, I suppose. He should have stated that he does not use the word *cent* in the sense in which we have made it current.

10. "This question was well discussed before the Committee of the House. As a coin of exchange nothing forbids the half or the fourth of a mil; but we have seen that people will not have half-farthings.

11. "This is all a misconception. We care nothing for traditionary qualities, nor for measures of value, in this particular question. We contend for the pound because people are accustomed to think of their money affairs in pounds, and because immense inconveniences would arise from the attempt to introduce any other coin as the highest coin of account. And we know that, on this point, we have the great bulk of the commerce of the country with us.

12. "All these difficulties have been well discussed. What are the social advantages which have arisen from the postages, stamps, &c., being exactly one 240th of a pound, and which would be lost if they were one 250th or one 200th? And how are laws destroyed by changing the word 'penny' into 'four mills,' or 'five mils?'

13. "We desire £1, because it is established, and we see no reason for incurring the inconveniences of a change. We have both gold and silver units—the pound for large values, and the florin for small ones. The coin of £1. 0*s.* 10*d.*, so far from meeting our objections, is itself one of the greatest of them. And two gold coins, so near each other as £1. and £1. 0*s.* 10*d.*, would make a Balaklava mess of our whole monetary system; and would benefit none but those who wish to cheat shopkeepers in the dusk of the evening.

14. "This we deny. We say it would be practically impossible to reckon in tenpences and pay in shillings.

15. "Most persons think that the money should be changed first. Why should the whole change be made at once? But there is no fear. 'To *adopt* one pound as the unit?' A pound *is* the large unit: a shilling *is* the small one. We desire to have the pound and the florin. Show us any 'proportion to the comparative value of commodities,' which the florin would not procure, and the 10*d.* would.

16. "As tenpence would never be *equal* to the French franc, the small fraction of difference would be very inconvenient. If the rate of exchange now require statement involving single sous, it would require fifths of centimes, to express it after the change. Any *decimal* system, whatever its unit, would effect a facilitation in the *calculation* of exchanges.

17. "All this has been answered in what precedes. The people will easily recognize, in their accounts, the coins they see in daily use. The immense *diminution* of labour, the facilities introduced into education, will soon become apparent.

"If a decimal of five places ever be used, it will only be to do something which would now require hundredths of farthings. The fallacy is the one already exposed: the assumption that calculations, after the change, will be conceived in the old system and translated into the new system. The very great facility with which five decimal places may be handled has, perhaps, induced some of our advocates to parade them. But three places will be sufficient. And, moreover, no one need know them as decimal fractions: they may be florins, cents, and mils."

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The following rejoinder appears in the *Journal of the Society of Arts*, September 21st, 1855:—

"DECIMAL COINAGE.

"SIR,—I have had in my possession for some time the enclosed reply, written by the same 'London Merchant' as furnished the original article. I hope you may still consider it worthy of a place in the *Journal* of the Society.

"Yours very truly,

"J. E. GRAY."

"*British Museum, August 15th*, 1855."

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"SIR,—In Professor De Morgan's *Reply to Statements in favour of a Tenpenny Unit*, addressed to the honourable member for South Lancashire, and directed to members of the Legislature, and distributed by the Decimal Association, which statements appeared in the *Times* City article of 3rd May, there is a remarkable display of small wit at the expense of sound reason. On a question of so much importance, about to be submitted to the consideration of the Legislature, the latter is the ingredient with which we have to deal; and in desiring to separate the 'chaff' from the wheat, we shall give a preference to the practical over the sentimental. It is only, therefore, to some of the paragraphs, which the Professor has numbered, that any answer is required.

"2, 3, and 5.—The Professor contents himself with denying the necessity for using three decimal places to express in mils an equivalent to a farthing, but he forgets that the prices of many commodities are *smaller* than a farthing, and although he might adopt 1m. instead of ·001 to denote a single mil, he will find a lower decimal (equivalent to the 8th, 16th, 32nd, or 64th of a penny) somewhat difficult to express clearly in mils without the risk of mistake. He denies that our present mixed system affords any superior facilities for mental processes, and challenges the advocates of the tenpenny to produce their calculations in contrast with those of the pound and mil. We accept it—and shall take his own figures in illustration. What is the freight on 1,632 cwt. of cotton at $\frac{5}{16}$d. per. lb.? Mr. Brown will inform the learned Professor, that calculations like this are of constant occurrence in Liverpool.

| By the Mental Process. | By the Pound and Mil Scheme. |
|---|---|
| Every clerk knows that $\frac{1}{16}$d. per. lb. is equal to 7d. per cwt., therefore $\frac{5}{16}$d. = 2s. 11d.<br>1632 × 2s. 11d. = 136 × 35s.<br>Or £136 + £102 = £238. This result being obtained in less time than we take to read it, by memory alone. | 1632<br>112<br>3264<br>1632<br>1632<br>182784<br>$1\frac{1}{3}$ mil*<br>182784<br>60928<br>£243.712 |

"Again, taking the Professor's figures, 'What is the value of 1632 articles at £1 17s. 9d.?'

| By Mental Process. | By the £ and Mil Scheme. | By the Tenpenny Process. |
|---|---|---|
| 1632 at £1$\frac{7}{8}$ths + 1632 + 3d.<br>Or £3060 + 408s., or £20 8s. = £3080 8s. This result a clerk of less than average ability can arrive at immediately, without putting pen to paper. | 1632<br>1·8875<br>8160<br>11424<br>13056<br>13056<br>1632<br>£3080·4000 | 1632<br>45·3<br>4896<br>8160<br>6528<br>xdy 73929·6 |

"It requires no additional evidence to establish the fact, that a *high* unit for a decimal system of coinage is quite impracticable for calculations by mental processes.

"The learned Professor is unquestionably a high authority on subjects of science; but with all possible respect to his opinions and authority, practical men will consider that he is but imperfectly acquainted with the details of commercial affairs (and this is a question rather of details than results), in supposing that 8ths of a penny are not now employed in quoting the prices of articles. If Mr. Brown replies candidly to the learned gentleman's letter, he must correct him upon this point, by informing him that cotton is sold in the market at as low as 16ths of a penny per lb., that the freights in this commodity are calculated as low as 32nds, and that many articles manufactured of the material are reckoned even as low as 64ths of one penny. The official lists of imports and exports will enlighten the Professor as to the proportion of our commerce directed to this article and its products alone, without reference to other innumerable branches of manufacture, and to the consequently extended use of small divisions in our money system, and the necessity for preserving them in all their simplicity, which the *tenpenny* admits of, but the pound and mil do not. These minute subdivisions of the pound are employed likewise in the quotations of prices of hides, timber, spices, haberdashery, and in freights of such commodities as coffee, &c., &c.

---

* The nearest equivalent, if our opponents allow us to employ a fraction so favourable to them, but which is not decimal.

"4. The great gist of the question lies under this head, and the Professor, apparently knowing the weakness of his position as the advocate of the pound unit, states it clearly. His words are:—'We do not contend for £1 as *the* unit, but for £1 as the *highest* unit [Italics sic]. The decimal system makes passage from one unit to another much more easy, but it does not bind us to think in terms of one unit when another would be more convenient, &c.' There is an obscurity in this definition. The pound is or is not to be the ruling unit. Our decimal system of coinage, to be effective, must comprehend the *most convenient* unit. We contend that the submultiples or descending decimals of one pound are *inconvenient*, and that the united multiples and submultiples of tenpence *are* convenient, and overcome every possible difficulty. Here lies the question between us.

"6. The Professor is here at fault—he says the tenpenny unit '*displaces both the shilling and the pound*,' but he admits that the 'shilling would exist under a tenpenny system as 1, 2, *but it could never be a coin*.' Without criticising the paradox, we say, that every existing coin being formed of $\frac{1}{10}$th of tenpence, or a certain number of pence, may always exist, if the public require their use, *as coins of circulation although not coins of account*, and this is the great advantage the tenpenny possesses over the pound as a unit for decimal coinage. This statement is the more disingenuous, because, in referring to one of these coins in connexion with the £ and mil scheme, he observes, 'In the plan we propose, the shilling, though thrown out of *account*, remains unaltered, and may be used both in thought and in speech as at present.'—(See Preface to Report of Dec. Assoc. 129.)

"The learned Professor is facetious on the point as to the fixed price of standard gold. He reminds one of the philosopher who told his son, 'My dear boy, when your antagonist adduces an argument you cannot answer, laugh at his absurdity;' or to the advice given to a newly-inducted judge, 'Be decided; pronounce your judgment; but, remember, never give a reason for it.' He objects to the price of gold as being *too small* for illustration. We answer,—add your £50, £75, or even your £100 to the £3 17s. 10½d., and the result by the £ and mil scheme will still appear at disadvantage. Here it is—

| By £ s. d. | By £ and Mil. | By Tenpenny. |
|---|---|---|
| 3 17 10½ | 3·89375 | 98·45 |
| 28 17 10½ | 28·89373 | 693·45 |
| 53 17 10½ | 53·89375 | 1293·45 |
| 78 17 10½ | 78·89375 | 1893·45 |
| 103 17 10½ | 103·89375 | 2493·45 |
| 269 9 4½ | 269·46875 | 6467·25 |
| 47 figures. | 43 figures. | 33 figures. |

"If he wishes a higher comparison, and will take the trouble of increasing the £3. 17*s*. 10½*d*. by the decimal of £100, ascending to £1,000,000, he will find the results including the addition of the 5 lines) produced by £. s. d. in 66 figures, by £ and mils in 62 figures, and by tenpennies in 50 figures only.

"These illustrations are given *on his own invitation* and he will doubtless make the best of them, but the point still remains unchanged as to the price of standard gold. He cannot state it milesimally in less than 6 figures, while in tenpennies it can be expressed in 4.

"But let us leave the *fixed* value, and take the *fluctuating* price of bullion:—

| | £ *s.* *d.* | £ and Mil. | Xdy. |
|---|---|---|---|
| Price of foreign gold in bars, per oz. | 3 17 9 | 3·8875 | 93·30 |
| Mexican dollars | 0 4 10⅞ | ·2453125 | 5·8875 |
| Silver in bars (standard) | 0 5 0⅝ | ·2526041·6 | 6·0625 |

"The learned Professor, we suspect, will somewhat resemble the Irish deserter; hit him *high*, or hit him *low*, there is no pleasing him.

"His criticisms on the calculations of the division of £100, between 3, 6, 7, 8, and 9 persons, are singularly uncharitable. His knowledge of figures must have told him that the error was in the press, but as each of the lines of division is unquestionably correct, (each making the £100) his idea of pocketing a commission of £12. 2*s*. 2*d*. by the transaction is *clever—very!*

"15. The Professor's conception of a '*unit*' are somewhat remarkable. He says, 'a pound *is* the large unit—a shilling *is* the small one.' Perhaps, arithmetically, it would be most correct to say, that *one penny* is the unit of our present coinage. But when (desiring to have the pound and florin) he says, 'Show us any proportion to the comparative value of commodities which the florin would not procure and the 10*d*. would,' we feel ourselves challenged, and we reply, that by his scheme the florin contains 100 cents (or mils of £1.), while by the tenpenny system, 240 such cents would be contained in the florin. He seems to have a virtuous sort of horror at small change, but every poor woman who has to buy salt or soda, several pounds of which are sold for a penny, or the thousand other articles of small value, will speedily enlighten him as to the comparative usefulness of the smallest coins."

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To this letter the Professor replies as under (see *Society of Arts Journal*, Oct. 5, 1855.

"Sir,—A copy of your paper of September 21, has just been forwarded to me, in which I find an answer from a 'London Merchant' to my remarks of May 5, published by the Decimal Association, on his communication to the City article of the *Times* of May 3. On receiving it, I sat down to make some consideration of the question whether I should rejoin. The first passage I came to was the following :—'He challenges the advocates of the tenpenny to produce their calculations in contrast with those of the £ and mil. We accept it ; and shall take his own figures in illustration. What is the freight on 1.632 cwt. of cotton at $\frac{5}{16}$*d*. per pound.' This made me suppose, of course, that I had proposed this question as a challenge, and I was about to cast my eye on the calculations following, when it was arrested by 'Mr. Brown will inform the learned Professor that calculations like this are of constant occurrence in Liverpool.' It seemed so strange that I should be referred to Mr. Brown to justify my own question to myself, that I hunted out a copy of my remarks, and found, to my amusement, that my critic has indeed taken *my own figures*, but has packed them into a question of his own choosing. My figures 1,632 occur in £1 6fl. 3ct. 2m. Glancing further, I saw enough of this kind of proceeding to convince me that to answer this reply to my remarks I should find it necessary, after so long a lapse of time, to reprint a large portion of my remarks, and even of the article in the *Times*, on which they were made. My conclusion was, that neither my patience nor your space would last out an answer.

"I am, sir, yours, &c.

"A. De Morgan."

"*University College, October* 1, 1855."

RICHARD BARRETT, PRINTER, MARK LANE, LONDON.

# DECIMAL COINAGE.

A

## PRACTICAL ANALYSIS

OF THE

## COMPARATIVE MERITS OF ONE POUND & TENPENCE

AS THE

RULING INTEGER OF A DECIMAL CURRENCY

FOR THE UNITED KINGDOM,

SHEWN BY

TABLES OF MERCHANDISE, PRODUCE, FRENCH MERCHANDISE, UNIVERSAL PROFITS
PER CENT., MARINE AND OTHER INSURANCES, ETC.;

TO WHICH IS ADDED,

*£. S. D. and F.*

REDUCED INTO TWENTY-EIGHT OF THE PRINCIPAL COUNTRIES OF THE WORLD; THE DIVISION
OF THEIR MONEYS, AND VALUE
IN DECIMALS OF THE £., &c.

By JAMES LAURIE,
AUTHOR OF "UNIVERSAL EXCHANGE TABLES," "INTEREST TABLES," &c., &c.

LONDON:
ARTHUR HALL, VIRTUE & CO., 25, PATERNOSTER ROW;
LIVERPOOL: DEIGHTON & LOUGHTON.

1854.

RICHARD BARRETT, PRINTER, MARK LANE, LONDON.

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| | PAGE. |
|---|---|
| France | 19 |
| Belgium | ” |
| Genoa | ” |
| Switzerland | ” |
| Greece | ” |
| Lombardo Veneto | ” |
| Tuscany | ” |
| Holland | 20 |
| Russia | ” |
| Naples | ” |
| Rome | ” |
| Portugal | 21 |
| Madeira | ” |
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| Turkey | 22 |
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| St. Galen | ” |
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| Hamburg | ” |
| Lubec | ” |
| Prussia | ” |
| Saxony | ” |
| Bremen | 24 |
| Sweden | ” |
| Denmark | ” |
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| Norway | 25 |
| Sicily | ” |
| Spain | ” |
| Gibraltar | ” |

# NOTICE.

A melancholy interest is attached to this work, as, during its progress through the press, the Author's Widow and Family have to deplore his death.

*August* 28*th*, 1854.

# DEDICATION.

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TO THE
PRESIDENT AND MEMBERS OF THE BRITISH ASSOCIATION.

My Lords and Gentlemen,

There is, perhaps, no subject of greater importance to a commercial country, than that which relates to its currency and coinage. There is no question of more surpassing interest to the community at large, than that which involves an alteration from an existing system, by which its trading operations have been hitherto measured and governed, and which is practically conversant to every man—to one, which has been untried, and may be open to many well-founded objections as to the correctness of the theory on which such a change is proposed to be founded—as well as its adaptation, not only to the internal convenience of our own people, but to the monetary systems of other countries with which we have trading relations;—and,—there is no body of men, to whom the consideration of such an important question, can with greater propriety be referred, than to an Association, which has for its first great objects the promotion of the social and scientific interests of the United Kingdom. In dedicating, therefore, with great humility, and on a sick-bed, the following pages to your Association, I feel that I only offer a homage, however imperfect it may be, at the shrine where it is most due,—and where its merits, if it possesses any, may be rendered most serviceable to the country at large.

I am, with profound respect,
My Lords and Gentlemen,
Your most obedient and humble Servant,
JAMES LAURIE.

*London, No.* 9, *Billiter Street,*
21*st August,* 1854.

# DECIMAL COINAGE.

Great interest is felt at this time about the introduction of some system of decimal coinage, in the place of that at present in use in this country. Much difference of opinion exists on the question. A Committee of the House of Commons has reported in favour of the pound sterling divided into 1000 parts or mils, as the integer or basis of the proposed change. Many well-informed and scientific men have expressed their opinions on the subject, some in favour of and others opposed to the conclusion at which the Committee have arrived. And, as it is a question which deeply affects the interests of the community at large, it becomes the duty as well as the business of every man who has formed an opinion on so important a subject, to give free expression to that opinion, whether for or against the conclusion to which the Committee have arrived, before their recommendation, for want of a close inquiry into its merits, be allowed to carry sufficient weight in Parliament to become the law of the United Kingdom.

The necessity for a change in our present system is admitted on all hands,—it is cumbersome and laborious in the ordinary transactions of business,—is at variance with the scientific character of the age,—and is particularly inconvenient, as regards our operations with those countries who have preceded us in the adoption of a decimal currency, and where our increased intercourse renders it desirable that we should assimilate as nearly as we can, if not completely, to the principles on which their currencies are established.

It will be a great point gained in any system of decimal coinage to be authorized by Parliament, if the principles on which that coinage may be founded be one of a lasting character,—which may derange as little as possible the existing coins now in use,—and afford greater facilities than we at present possess for rapidity and exactness in monetary calculations. We propose to inquire how far these objects are likely to be gained by the plan recommended by the Parliamentary Committee, having as its basis the pound sterling, millesimally divided, as the integer of the decimal.

At the very outset of our inquiry, we find that this proposed integer involves the sacrifice *of all our small coins under* 6*d.*—viz.

the 4*d.*, 3*d.*, 1*d.*, ½*d.* and ¼d.—to not one of which does any of the decimal subdivisions of the pound correspond. It seems to us, that to propose the adoption of an integer which involves the sacrifice of these small coins, is worthy of grave consideration, looking at *the importance of even the penny itself,* which in one sense may be regarded as perhaps the most valuable coin in the country. To introduce the decimals of a pound merely, without regard to the existing coinage, as the principle of our currency, seems an unnecessary interference with innumerable arrangements which exist under the sanction of particular Acts of Parliament. These small pieces proposed to be displaced, have their fixed representatives in articles of food, and in a thousand other commodities, determined by a sort of conventional law, well understood by the public, and particularly by the poorer classes. It would be of far more advantage, *that the integer of the decimal should be one which would comprehend every existing coin,* and occasion no sort of inconvenience or loss to the public when the decimal currency came into use. In this respect the integer of £1 is a complete failure,—that object can be secured by an integer of 10*d.* only,—*and by that integer alone divisible into cents.* Were the tenpenny introduced, there is not an existing coin which could not readily be adapted to such an arrangement, and the coinage as it exists would continue to circulate until it was worn out, each coin representing ten cents for every penny of its value,— This will at once be seen by the following table of equivalents :—

| | | | | | |
|---|---|---|---|---|---|
| The proposed Integer of | | 10*d.* | = | 1.00 | Cents. |
| A Sovereign | or | £1 | = | 24.00 | ,, |
| Half ditto | ,, | 10*s.* | = | 12.00 | ,, |
| Crown | ,, | 5*s.* | = | 6.00 | ,, |
| Half ditto | ,, | 2*s.* 6*d.* | = | 3.00 | ,, |
| Florin | ,, | 2*s.* | = | 2.40 | ,, |
| Shilling | ,, | 1*s.* | = | 1.20 | ,, |
| Sixpence | ,, | 6*d.* | = | .60 | ,, |
| Fourpenny | ,, | 4*d.* | = | .40 | ,, |
| Threepenny | ,, | 3*d.* | = | .30 | ,, |
| Penny | ,, | 1*d.* | = | .10 | ,, |
| Halfpenny | ,, | ½*d.* | = | .05 | ,, |
| Farthing | ,, | ¼*d.* | = | .02¼ or 0.25 | ,, |

The simplicity of this arrangement can admit of no question, and it would greatly facilitate our exchange operations with those countries where our dealings are most extensive; namely,—with the

United States of America, France, Holland, and other countries in Europe, where a system of decimal currency prevails. On the contrary, the subdivision of the pound into 1000 mils, as proposed by the Committee, would afford no ready advantage for calculation in such exchange operations—as no precise number of mils will be found to be an equivalent to the existing coins in other countries. By adopting the decimals of £1 millesimally divided, the existing English coinage would stand thus, in its relative proportion to that integer:—

£1 = 1.000
10*s.* = .500
5*s.* = .250
2*s.* 6*d.* = .125
2*s.* = .100
1*s.* = .050
6*d.* = .025
4*d.* = .016666 +
3*d.* = .0125
1*d.* = .004166 +
½*d.* = .002083 +
¼*d.* = .0010416 +

This system, which is recommended in the Report of the Committee, has found some favour with those who seem to look exclusively at the pounds rather than the pence. It is a system better adapted for the ledger than the day-book; and if advantageous to any class, certainly rather to the rich than the poor—while it ought never to be forgotten, that the poor, who form the great bulk of the community, have an altogether overwhelming interest in this question; we are brought therefore to the inevitable conclusion, that *monies for account* on a large scale, rather than *coins for circulation* of a small description, have been the predominating idea which has governed the authors of the report in arriving at the conclusion, that the pound ought to be adopted as the integer in the proposed decimal coinage, and divided as proposed into 1000 parts. In no other country where a decimal system of currency has been introduced, has so bold an experiment been suggested, far less been introduced into practice. It seems mere trifling with the question. In America,* where the dollar is the integer, and which has been also adopted in Canada, from its proximity to the States, and the growing intercourse in trading operations which has arisen between them, a centesimal division gives a cent. which is equivalent to an English halfpenny; but the United States, happily for themselves, are as yet in ignorance of a population struggling for existence, and reduced as in this country to the lowest species of food; nor have they as yet introduced that class of manufactures, where competition in labour has led to the production of articles of infinitesimally small value. On the contrary,—in the nations of Europe, where the poverty and wants of the people have a paramount claim on the consideration of statesmen, their first regard has been to supply an exchangeable measure of value *for the smallest cravings of humanity*. In Holland, the 100th part of their integer is equivalent to a coin of the value of $\frac{1}{5}$th less than our farthing; in France, $\frac{2}{5}$ths less than our farthing; in Portugal, the ree, their smallest coin, is only about equal to $\frac{1}{5}$th of our farthing; while in other nations on the continent, who either have or have not introduced a decimal system, coins of the most minute value (in comparison to which our farthing is a princely coin) pass current amongst the people. There, the principle seems to have been established (and it is worthy of all honour, particularly in countries where the people are pressing on each other for the means of subsistence) of providing a coin, which, in the possession of the poor, is competent to the command of a single mouthful of food.

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* The change was not so great as might appear, as dollars were the general coin when the change took place in America—not sovereigns and shillings.

The difficulties which beset this subject are much greater than many are aware of who are not conversant with the practice which prevails in the manufacturing districts, of invoicing many descriptions of goods at minute fractions of a penny, and the introduction of a system of decimal calculation for monies of account, under such circumstances, which does not comprehend a unit much lower than a "mil," is not only impracticable if the present prices of such articles are to remain unchanged in their relative value; but it is unavoidable that any decimal system of currency should be simultaneous with a complete revolution in the present practice of affixing prices, or adjusting quantities or weights to the modified currency. In the lace trade, for example, numerous articles in black and white lace, both in silk and cotton, are charged at 8ths, 16ths, 32nds, and even in some cases (between the manufacturer and the dresser of the goods) so low as 64*ths of one penny per yard.* The same applies to many branches of the cotton manufacture as well as to the material itself. It is only necessary to compare the equivalent values of such minute fractions with the corresponding decimal under the proposed alteration in the currency, having the pound as the integer, to be satisfied of the utter impossibility in practice of carrying out that principle with an integer so large; and that if the country is to receive the benefits of a decimal currency at all, both in its coinage and monies of account, it is absolutely indispensable that the integer should be as *small* as may be felt to be consistent with the general convenience of the public. Take the following equivalents in illustration of this argument:—

The integer of £1 represents 1,000 mils, consequently—

| | | |
|---|---|---|
| 1 penny | is equal to | 004.166666+ |
| ½ | „ | 002.083333+ |
| ¼ | „ | 001.041666+ |
| ⅛ | „ | 000.520833+ |
| $\frac{1}{16}$ | „ | 000.260416+ |
| $\frac{1}{32}$ | „ | 000.130208+ |
| $\frac{1}{64}$ | „ | 000.065104+ |

Again, the vast stimulus which improved machinery, or the application of machinery, has given to productive labour, during the last twenty years especially, has not only lessened the cost of a variety of articles, but has actually so far reduced their value compared with a former period as to compel manufacturers to sell the goods in parcels or fixed lots (usually corresponding to the aliquot parts of a pound or a shilling, for the convenience of calculation), their minute value making it otherwise impossible to affix a price demonstrable by any even of our smallest coins. For instance,

*Pearl shirt buttons* are sold as low as 2½*d.* per gross, or $14\frac{4}{25}$ for a farthing.

*Agate, or porcelain shirt buttons,* at 13½*d.* per great gross, or 32 for one farthing.

*Bone buttons* at 10½*d.* per great gross, or $41\frac{1}{5}$ for a farthing.

*Tapes* at 1½*d.* for 12 pieces, measuring 2½ yards each, being 5 yards for a farthing.

*Cotton bobbins* at 1½*d.* for 12 pieces of 3 yards, or 6 yards for a farthing.

*Sewing cotton on reels* at 2*d.* per dozen, being equal to 1½ reels for a farthing.

*Sewing cotton in balls* at 1*s.* per lb. of 128 balls, being equal to $2\frac{66}{100}$ balls for a farthing.

*Needles* 9*d.* per thousand (in 40 papers containing 25 each), being 27½ needles for a farthing.

*Pins* at 10*d.* per lb. of 16 ounces, put up in papers of ounces or half ounces, or about 40 pins for one farthing.

With facts before us such as these, and which refer to only a few of the very numerous articles at the command of the public, in their constant traffic, it requires no arguments to establish the great truth, *that our coinage as it stands does not descend low enough for the wants of the great bulk of the community;* and for this evil the proposed decimal coinage, consisting of pounds, florins, cents, and mils, supplies no remedy, and leaves that important consideration altogether untouched. There can be no question that under the existing system of coinage for circulation, the public is exposed to much loss either by buying a larger quantity of a commodity than occasion requires, or submitting to pay a much higher price than any reasonable profit on the original cost of an article would justify. But if this is the case with respect to commodities such as these, which are indispensable to the wants of the poor, how, much more severely must the privations of that class be enhanced by their very food itself (which they can only afford to buy in small quantities), being subjected to the same conditions. During the last eighteen months the prices of bread have ranged from 4½*d.* to 10*d.* per quartern loaf for bread of second quality; but the public at present derive no advantage from any fall in the price of flour under 2*s.* a sack, as we have no coin smaller than a farthing to represent it. If the tenpenny were adopted as the integer every reduction of 20*d.* in the sack of flour would be nearly three cents off the quartern loaf. Taking the prices of bread alone, if we contrast the equivalents between our present system of coinage with the decimal system, having £1 and 10*d.* separately as the integer, it cannot fail to be acknowledged that the tenpenny possesses in simplicity a great advantage over the pound.

| Pence. | Mils of £1. | Cents of 10*d.* |
|---|---|---|
| 4½ | 018.75 | 45 |
| 4¾ | 019.7916+ | 57½ |
| 5 | 020.8325 | 50 |
| 5¼ | 021.8750 | 52½ |
| 5½ | 022.9166+ | 55 |

| Pence. | Mils of £1. | Cents of 10*d.* |
|---|---|---|
| 5¾ | 023.9583+ | 57½ |
| 6 | 025. | 60 |
| 6¼ | 026.0416+ | 62½ |
| 6½ | 027.0833+ | 65 |
| 6¾ | 028.1250 | 67½ |
| 7 | 029.1666+ | 70 |
| 7¼ | 030.2083+ | 72½ |
| 7½ | 031.25 | 75 |
| 7¾ | 032.2916+ | 77½ |
| 8 | 033.3333+ | 80 |
| 8¼ | 034.375 | 82½ |
| 8½ | 035.4166+ | 85 |
| 8¾ | 036.4583+ | 87½ |
| 9 | 037.50 | 90 |
| 9¼ | 038.5416+ | 92½ |
| 9½ | 039.5833+ | 95 |
| 9¾ | 040.625 | 97½ |
| 10 | 041.6666+ | 100 |

These are mere equivalents to our existing coinage. Should the pound be adopted as the basis of a decimal coinage, its subdivision into a thousand parts will (like any other system, however imperfect) in course of time become familiar to the public, who would have to reconcile themselves to it as they best could, by inventing expedients to meet the difficulty, independently of monies for account, until they could succeed in introducing a better system; but practical business men cannot be mistaken as to the inconvenience of its operations in commercial transactions, compared with that decimal currency which would have tenpence as its basis, because it is too palpable not to be seen, that the one system invariably requires *three* distinct figures on the right hand side of the point, irrespective of an endless range of lower decimals which must be dropped in the calculation (a most inconvenient arrangement where the invoice price of commodities are of small value); while the other requires *two* figures only. By this class it would not be used at all—and these objections are of themselves sufficient reasons for rejecting a plan which in other respects possesses no possible recommendation, *particularly as the pound would still maintain its denominational value, whether the tenpenny or the sovereign were adopted as the ruling decimal.*

Besides, it is highly inexpedient, if not worse, to subject any portion of the community to loss by the principle on which such a change in the currency is proposed to be effected. To adopt the basis of £1 would be to inflict a universal penalty on every one who happened to hold small coins, while the holders of the sovereigns would escape. It has been shown that the change in its operation can do no good to the lower classes, for it makes no material modification between the value of the mil and the value of the farthing—the farthing would readily be received as a "mil;" but the penny would certainly not pass for more than four mils, simply because it is not equal in value to five of them.

Let us only examine practically in what way the necessaries of life would be obtainable by the poor under a decimal currency, and by comparison, which system of decimal coinage would be most convenient and attended with least loss.

In the low neighbourhoods in London during the past and the present year, commodities have been sold in retail quantities at the following prices, and we give their equivalents in a decimal coinage, on the supposition that a coin representing 1 mil, or the 1000th part of £1; or 1 cent, or the 100th part of 10*d*.—is to be in some short period introduced.

| | Mils at 20*s*. per 1000 | | Cents at 10*d*. per 100. | |
|---|---|---|---|---|
| | Equivalent. | Nearest coin. Mils. | Equivalent. | Nearest coin. Cents. |
| Jan. 1853, bread per loaf, 6*d*. | 025· | ·025 | ·60 | ·60 or 6*d*. |
| Oct. ,, ditto ditto 8½*d*. | ·035·416 | ·036 | ·85 | ·85 ,, 8½*d*. |
| Nov. ,, ditto ditto 9½*d*. | ·039·582 | ·040 | ·95 | ·95 ,, 9½*d*. |
| Jan. 1853, coals per cwt. 1*s*.10*d*. | ·091·666 | ·092 | 2·20 | 2·20 |
| Jan. 1854, ditto ditto 2*s*. 4*d*. | ·116·666 | ·117 | 2·80 | 2·80 |
| Feb. ,, ditto ditto 2*s*. 8*d*. | ·133·333 | ·134 | 3·20 | 3·20 |
| Potatoes (same periods) | | | | |
| per lb. 1*d*. | ·004·166 | ·005 | ·10 | ·10 ,, 1*d*. |
| 1¼*d*. | ·005·2076 | ·006 | ·12½ | ·13 ,, $1\frac{3}{10}$*d*. |
| 1½*d*. | ·006·250 | ·007 | ·15 | ·15 ,, 1½*d*. |
| Tea (3*s*. per lb.) ¼ oz. ¾*d*. | ·003·1246 | ·004 | ·07½ | ·08 ,, $\frac{8}{10}$*d*. |
| Sugar (3½*d*. per lb.) 2 oz. ½*d*. | ·002·083 | ·003 | ·05 | ·05 ,, ½*d*. |
| Coffee (1*s*. per lb.) ½ oz. ½*d*. | ·002·083 | ·003 | 05 | ·05 ,, ½*d*. |
| Candles (6*d*. to 8*d* per lb.) | | | | |
| each 1½*d*. | ·006·250 | ·007 | ·15 | ·15 ,, ½*d*. |
| | £·470.8272 | 479 | 11·30 | 11·31 |

By this table it is clearly seen that, under the system advocated in the Report of the Parliamentary Committee, where the integer of the decimal is 20*s*., the poorer classes will lose at the rate of

$1\cdot\frac{73}{100}$ or about 2 per cent., while under the system of 10*d.*—*i. e.* 24 to the pound—they would lose only $\cdot\frac{008}{1000}$ per cent.; an almost imperceptible fraction, and not requiring consideration in estimating the comparative benefits of the two systems in their operation on the condition on the poor. By purchasing in small quantities the poor already lose on tea 33⅓ per cent.; on sugar 14$\frac{2}{7}$ per cent., on coffee 33⅓ per cent., and on candles 12½ per cent.; but were decimal coinage introduced with £1 as the integer, the additional penalty of nearly 2 per cent. would be rivetted on them without the possibility of escape, unless by the introduction of a decimal system of weights and measures, which certainly ought to be simultaneous with a decimal currency.

The large importations of silks, wines, fruit, cattle, provisions, as well as other commodities from France into England of late years, has familiarised the English importer with the decimal currency of our neighbours; which the increasing intercourse between the people of both countries is every day improving. Under such circumstances it is almost impossible to overrate the importance of assimilating their coinage and monies of account to our own; and although a very slight difference would still exist in intrinsic value between the franc of France and the tenpenny-piece which we recommend to be adopted as the integer of a decimal coinage here, the denomination of both coins would be the same, and their value would be so close to each other as it might reasonably be expected must lead to their circulating indiscriminately in either country. At all events, it would be a great advantage to the importing merchant, that the monies of account were the same in England as in France, as it would save the immense labour to which he is at present subjected by adjusting prices in an English which have been charged in a French currency—a simple calculation as to difference of exchange, expense of transit, commission, and profit, so as to arrive at a per centage to be added to the invoice price, would be all that would be necessary to enable him to adjust the selling price of any article imported from that country;—and *vice versa*,—for in the anticipation of the French ports being opened at an early period for British manufactures, it is of importance that the currencies of both countries should be assimilated as closely as possible.

But a very powerful argument in favour of a *low* integer over a high one, is furnished by the practice which prevails amongst the manufacturers and merchants in France of affixing prices always divisible by 5, so as to facilitate the calculations of the invoice.

The following few lines from a silk manufacturer's invoice will show the practice which obtains there, and establish by contrast with a decimal currency having an integer of £1, that the latter would be altogether unfit for the purposes of trade, and would never be adopted by the mercantile community.

Extract from French manufacturer's invoice:—

| | | Francs. |
|---|---|---|
| 56½ ells . . . | at 2.50 . . . | 141.25 |
| 59¼ . . . | 2.75 . . . | 162.93.75 |
| 55½ . . . | 3.55 . . . | 197.02.5 |
| 56½ . . . | 3.85 . . . | 217.52.5 |
| 56¼ . . . | 4.10 . . . | 230.62.5 |
| | | Fr. 949.36.25 |
| Equivalent at the exchange of 25 frs. to | | £37.974500 |

The whole of the figures in the above extract (exclusive of the totals) are 60 in number, and the descending decimals are added to show the whole extent of the calculation. We shall now take the same goods at their equivalent values in a decimal currency on a basis of £1.

| | | |
|---|---|---|
| 56½ ells . . . | at .10416 . . . | £5.88504 |
| 59¼ . . . | .1145083 . . | 6.784616775 |
| 55½ . . . | .147916 . . | 8.1427758 |
| 56½ . . . | .160416 . . | 9.063504 |
| 56¼ . . . | .17076 . . | 9.60525 |
| | | £39.481186575 |

*Every line in this calculation presents an interminable decimal;* the figures are 87 in number (without reference to the enormous number of figures required for ascertaining this latter calculation beyond the former), and not a single repeating figure is used. Now, there is no possibility of avoiding this immense labour, except by dropping all decimals beyond the first three figures on the right side of the point; but that can only properly apply to the *totals* at each price, and not to the *prices* themselves, because in the event of the value of the article invoiced being very low (for example @ 1½*d.*, which is represented by a decimal of .006250, where, by dropping the three right-hand figures, there would be a loss of 4 per cent. on the price), the seller would speedily find to his cost, that the new decimal system on the basis of one pound, would wreck him on the shoals of bankruptcy. But it may be said, since there are so many as three figures on the right side of the point, (instead of two, as in the case of a tenpenny) we may drop all beyond them, and adopt the French system of making the decimal price divisible by 5, so as to reduce the labour of calculation ! Let us see the result of a conclusion, such as this :—

| | | |
|---|---|---|
| 56½ ells | . . .105 | . . . £5.932.5 |
| 59¼ „ | . . .115 | . . . 6.813.75 |
| 55½ „ | . . .150 | . . . 8.325 |
| 56½ „ | . . .165 | . . . 9.322.5 |
| 56¼ „ | . . .175 | . . . 9.843.25 |
| | | £40.237.00 |

Now, if we compare this total with the former table presenting the precise equivalents, we shall see, that a calculation founded upon a conventional principle such as this, would expose the buyer to a positive loss of $1\frac{91}{100}$, or nearly *two per cent.* on the actual value of the goods. It is evident, therefore, that even by having recourse to a set of expedients, so as to recommend the pound as the best possible integer, it could never command respect as an example of exactness of accounts between man and man, and would be altogether repudiated as a convenient arrangement, either in mercantile or ordinary transactions, *the great object which the Committee by such system profess to establish.* Were it even to be forced upon the public as, a theory established by law, it must at once be found so inoperative, as to be worse than useless in practice.

We have thus shewn :—

1st. That the introduction of a scheme of decimal coinage, founded on the division of the pound into 1000 parts or mils, would occasion loss to individuals holding small coins.

2nd. That it would be most inconvenient for the purposes of Foreign exchanges with all those countries in which decimal systems are founded on a different principle.

3rd. That it would occasion vast labour in calculating quantities of small value, and that it is altogether inapplicable to minute fractions in matters of account; being more adapted for aggregates than for details.

4th. That it does not descend low enough as a measure of value, for affixing prices on the productions of labour.

5th. That it exposes the people to loss on food and other commodities bought in small quantities, and that it would prevent their deriving the immediate benefit of any slight fall in the price of bread or other necessaries.

6th. That it would largely increase the labour of both day-book and ledger clerks, by imposing on them the necessity for using a much greater number of figures, and consequently would be attended with greater risk of error than exists even at present under the system of L. S. D., and far more than would exist under a decimal currency with a basis or integer of tenpence.

7th. That it would rather embarrass than facilitate our commercial transactions with France and other countries which have adopted systems of decimal currency, while an assimilation between the currencies of France and England would confer the greatest benefit and convenience on both countries, and probably lead to the same system being adopted by others.

8th. That it is most objectionable in its character, as it comprehends interminable decimals in nearly all its calculations, and is therefore laborious and inconvenient in practice; besides, as regards book-keeping, being incomplete, and therefore inexact in its results.

But, in addition to these reasons, the proposed system of decimal currency on the basis of £1 divided into mils, or 1000ths, is in other respects highly objectionable, since such division is inapplicable to the Penny Postage and Stamp Receipt Acts, and also to all local Acts of Parliament imposing rates, tolls, or dues; and it therefore necessarily involves the repeal and remodification of such Acts, where they relate to sums of from one penny to four-pence inclusive;—a necessity which is entirely avoided if the decimal currency is established on the basis of tenpence as the integer.

Objections so onerous and incontrovertible render it improbable, if not impossible, that the Parliamentary Committee could have duly considered or, indeed, have been made at all aware of the difficulties in which a decimal currency on such a basis must involve all the commercial and trading operations of the country, and it is an enigma to conceive the grounds on which they have ventured to recommend its adoption. It is not unlikely that the pound as the integer for decimal division, they were in some degree influenced by anxiety for the best possible security as regards the established and existing standard of value. This might be a reason of some weight, were it at all necessary to secure the object in view; but this is clearly not the case if the 10*d.* continues, as at present, the 24th of the pound. It is, indeed, a reason for advocating the *gold* coin worth 20*s.*, or 240 pence, called a *sovereign,* because the gold sovereign is by law established as the only legal tender, and this coin carries on its face the evidence of its purity and standard value;—but it is no reason for adopting the *pound* as the basis of the coinage, as that may be satisfied, with respect to its value, by other coins than gold.

If the gold standard, in conjunction with the legal tender, has influenced the decision of the Committee, that is a consideration which we may fairly demur to as irrelevant to the question. The standard value of gold was as much acknowledged in France as it was in England, when the decimal system of coinage was introduced there; but it did not induce them to adopt the Louis d'Or as the basis of the currency, nor has the Napolèon of the present day been affected in value, far less displaced, by the existence of the franc as the integer of their currency. Neither did it prevent the learned persons who were appointed to adjust the question of monies, weights and measures, from adopting a system, which has not only continued unchallenged until the present day, but is held up as one of the greatest civil glories of the Consulate, namely:—*that all monies, weights and measures, should be determined on the basis of a decimal calculation, on a defined and simple principle.* Abstractedly considered, the pound in itself, as represented by gold, possesses no particular advantage over silver as a measure of value, as it must be governed by the relative quantities of these metals in the markets of the world, and a degree of importance seems to have been attached to it by the Committee, to which, from its intrinsic worth in gold, as a commodity governed like any other by its plentifulness or scarcity, and likewise by all its antecedents in this country alone, it is scarcely entitled. It merely represents 240 pence of our currency, and it would still be acknowledged to bear that relation to the other coins in use, and would circulate as freely, whether the integer to be adopted for a decimal coinage, were a florin, a tenpenny, or any other aliquot coin, unless the recommendation of the Parliamentary Committee were carried into effect, in which case the penny (the most important of all coins, to be preserved in a decimal currency for this country) would be entirely swept away, and cease to be a measure of the pound. The Committee have assigned no reason, far less adduced any argument, why these small coins ought to be discontinued; nor is it necessary, in order to preserve the pound, as the basis of the currency, that so many other coins in common use should be sacrificed for that object; particularly when it is considered that these smaller coins are in more general circulation among the body of the people at large, and are therefore, in the aggregate, to be regarded as of more real utility to the people than the sovereign itself, which the Committee recommend as the basis of the currency.

The tables which are subjoined, establish, on the other hand, that the integer of 10*d.* fulfils all the required conditions; namely,—permanency in its character,—adaptation to all our existing coins, as well as to the decimal currency of other countries, and—convenience for rapid and exact calculations. These, we apprehend, are the objects which it is desirable to obtain by the introduction of any system of decimal coinage; and if they cannot be obtained in much greater perfection than by the proposed introduction of the £1 divided into mils, it would be of far greater benefit to the country at large, that our present system of L. S. D. with all its imperfections, should continue to exist until that happy period shall arrive, when the advantages of a sound, simple and strictly decimal currency will not only be better understood, but be acknowledged as proper for adoption by all civilized nations, on one uniform principle.

# TABLES OF MERCHANDISE

AND

# *£. s. d. and f.*

REDUCED INTO TWENTY-EIGHT OF THE PRINCIPAL COUNTRIES OF THE WORLD;
THE DIVISION OF THEIR MONEYS, AND VALUE IN
DECIMALS OF THE £., &c.

# TABLE I.—Showing Merchandize per Yard, Piece, Dozen, lb., &c., in Sterling and Decimals of the £., and Equivalents in Tenpennies.

| | STERLING. | TENPENNIES. | |
|---|---|---|---|
| Yard, Piece, Dozen, lb. | 1 to 1 Million Yards, Pieces, Dozens, lbs., &c. | Yard, Piece, Dozen, lb. | 1 to 1000 Yards, Pieces, &c. |
| S. D. | £ | Tenp. Ct. | Tenp. |
| 0 0 | | | |
| 1-16 | .000260417 | 0 0⅝ | 0.00625 |
| 1- 8 | .000520833 | - 1¼ | -.01250 |
| 3-16 | .000781250 | - 1⅞ | -.01875 |
| 1- 4 | .001041667 | - 2½ | -.02500 |
| 5-16 | .001302083 | - 3⅛ | -.03125 |
| 3- 8 | .001562500 | - 3¾ | -.03750 |
| 7-16 | .001822917 | - 4⅜ | -.04375 |
| 1- 2 | .002083333 | - 5 | -.05000 |
| 9-16 | .002343750 | - 5⅝ | -.05625 |
| 5- 8 | .002604167 | - 6¼ | -.06250 |
| 11-16 | .002864583 | - 6⅞ | -.06875 |
| 3- 4 | .003125000 | - 7½ | -.07500 |
| 13-16 | .003385417 | - 8⅛ | -.08125 |
| 7- 8 | .003645833 | - 8¾ | -.08750 |
| 15-16 | .003906250 | - 9⅜ | -.09375 |
| 0 1 | .004166667 | - 10 | -.10000 |
| 1-16 | .004427083 | - 10⅝ | -.10625 |
| 1- 8 | .004687500 | - 11¼ | -.11250 |
| 3-16 | .004947917 | - 11⅞ | -.11875 |
| 1- 4 | .005208333 | - 12½ | -.12500 |
| 5-16 | .005468750 | - 13⅛ | -.13125 |
| 3- 8 | .005729167 | - 13¾ | -.13750 |
| 7-16 | .005989583 | - 14⅜ | -.14375 |
| 1- 2 | .006250000 | - 15 | -.15000 |
| 9-16 | .006510417 | - 15⅝ | -.15625 |
| 5- 8 | .006770833 | - 16¼ | -.16250 |
| 11-16 | .007031250 | - 16⅞ | -.16875 |
| 3- 4 | .007291667 | - 17½ | -.17500 |
| 13-16 | .007552083 | - 18⅛ | -.18125 |
| 7- 8 | .007812500 | - 18¾ | -.18750 |
| 15-16 | .008072917 | - 19⅜ | -.19375 |
| 0 2 | .008333333 | - 20 | -.20000 |
| 1-16 | .008593750 | - 20⅝ | -.20625 |
| 1- 8 | .008854167 | - 21¼ | -.21250 |
| 3-16 | .009114583 | - 21⅞ | --21875 |
| 1- 4 | .009375000 | - 22½ | -.22500 |
| 5-16 | .009635417 | - 23⅛ | -.23125 |
| 3- 8 | .009895833 | - 23¾ | -.23750 |
| 7-16 | .010156250 | - 24⅜ | -.24375 |
| 1- 2 | .010416667 | - 25 | -.25000 |
| 9-16 | .010677083 | - 25⅝ | -.25625 |
| 5- 8 | .010937500 | - 26¼ | -.26250 |
| 11-16 | .011197917 | - 26⅞ | -.26875 |
| 3- 4 | .011458333 | - 27½ | -.27500 |
| 13-16 | .011718750 | - 28⅛ | -.28125 |
| 7- 8 | .011979167 | - 28¾ | -.28750 |
| 15-16 | .012239583 | - 29⅜ | -.29375 |
| 0 3 | .012500000 | - 30 | -.30000 |
| 1-16 | .012760417 | - 30⅝ | -.30625 |
| 1- 8 | .013020833 | - 31¼ | -.31250 |
| 3-16 | .013281250 | - 31⅞ | -.31875 |
| 1- 4 | .013541667 | - 32½ | -.32500 |
| 5-16 | .013802083 | - 33⅛ | -.33125 |
| 3- 8 | .014062500 | - 33¾ | -.33750 |
| 7-16 | .014322917 | - 34⅜ | -.34375 |
| 0 3 1- 2 | .014583333 | 0 35 | 0 35000 |
| 9-16 | .014843750 | - 35⅝ | -.35625 |
| 5- 8 | .015104167 | - 36¼ | -.36250 |
| 11-16 | .015364583 | - 36⅞ | -.36875 |
| 3- 4 | .015625000 | - 37½ | -.37500 |
| 13-16 | .015885417 | - 38⅛ | -.38125 |
| 7- 8 | .016145833 | - 38¾ | -.38750 |
| 15-16 | .016406250 | - 39⅜ | -.39375 |
| 0 4 | .016666667 | - 40 | -.40000 |
| 1-16 | .016927083 | - 40⅝ | -.40625 |
| 1- 8 | .017187500 | - 41¼ | -.41250 |
| 3-16 | .017447917 | - 41⅞ | -.41875 |
| 1- 4 | .017708333 | - 42½ | -.42500 |
| 5-16 | .017968750 | - 43⅛ | -.43125 |
| 3- 8 | .018229167 | - 43¾ | -.43750 |
| 7-16 | .018489583 | - 44⅜ | -.44375 |
| 1- 2 | .018750000 | - 45 | -.45000 |
| 9-16 | .019010417 | - 45⅝ | -.45625 |
| 5- 8 | .019270833 | - 46¼ | -.46250 |
| 11-16 | .019531250 | - 46⅞ | -.46875 |
| 3- 4 | .019791667 | - 47½ | -.47500 |
| 13-16 | .020052083 | - 48⅛ | -.48125 |
| 7- 8 | .020312500 | - 48¾ | -.48750 |
| 15-16 | .020572917 | - 49⅜ | -.49375 |
| 0 5 | .020833333 | - 50 | -.50000 |
| 1-16 | .021093750 | - 50⅝ | -.50625 |
| 1- 8 | .021354167 | - 51¼ | -.51250 |
| 3-16 | .021614583 | - 51⅞ | -.51875 |
| 1- 4 | .021875000 | - 52½ | -.52500 |
| 5-16 | .022135417 | - 53⅛ | -.53125 |
| 3- 8 | .022395833 | - 53¾ | -.53750 |
| 7-16 | .022656250 | - 54⅜ | -.54375 |
| 1- 2 | .022916667 | - 55 | -.55000 |
| 9-16 | .023177083 | - 55⅝ | -.55625 |
| 5- 8 | .023437500 | - 56¼ | -.56250 |
| 11-16 | .023697917 | - 56⅞ | -.56875 |
| 3- 4 | .023958333 | - 57½ | -.57500 |
| 13-16 | .024218750 | - 58⅛ | -.58125 |
| 7- 8 | .024479167 | - 58¾ | -.58750 |
| 15-16 | .024739583 | - 59⅜ | -.59375 |
| 0 6 | .025000000 | - 60 | -.60000 |
| 1-16 | .025260417 | - 60⅝ | -.60625 |
| 1- 8 | .025520833 | - 61¼ | -.61250 |
| 3-16 | .025781250 | - 61⅞ | -.61875 |
| 1- 4 | .026041667 | - 62½ | -.62500 |
| 5-16 | .026302083 | - 63⅛ | -.63125 |
| 3- 8 | .026562500 | - 63¾ | -.63750 |
| 7-16 | .026822917 | - 64⅜ | -.64375 |
| 1- 2 | .027083333 | - 65 | -.65000 |
| 9-16 | .027343750 | - 65⅝ | -.65625 |
| 5- 8 | .027604167 | - 66¼ | -.66250 |
| 11-16 | .027864583 | - 66⅞ | -.66875 |
| 3- 4 | .028125000 | - 67½ | -.67500 |
| 13-16 | .028385417 | - 68⅛ | -.68125 |
| 7- 8 | .028645833 | - 68¾ | -.68750 |
| 15-16 | .028906250 | - 69⅜ | -.69375 |

## TABLE I.—Showing Merchandize per Yard, Piece, Dozen, lb., &c., in Sterling and Decimals of the £., and Equivalents in Tenpennies.

| | Sterling. | Tenpennies. | | | Sterling. | Tenpennies. | |
|---|---|---|---|---|---|---|---|
| Yard, Piece, Dozen, lb. | 1 to 1 Million Yards, Pieces, Dozens, lbs., &c. | Yard, Piece, Dozen, lb. | 1 to 1000 Yards, Pieces. &c. | Yard, Piece, Dozen, lb. | 1 to 1 Million Yards, Pieces, Dozens, lbs., &c. | Yard, Piece, Dozen, lb. | 1 to 1000 Yards, Pieces, &c. |
| S. D. | £ | Tenp. Ct. | Tenp. | S. D. | £ | Tenp. Ct. | Tenp. |
| 0 7 | .029166667 | 0 70 | 0.70000 | 0 10 1- 2 | .043750000 | 1 5 | 1.05000 |
| 1-16 | .029427083 | - 70⅝ | -.70625 | 9-16 | .044010417 | 1 5⅝ | 1.05625 |
| 1- 3 | .029687500 | - 71¼ | -.71250 | 5- 8 | .044270833 | 1 6¼ | 1.06250 |
| 8-16 | .029947917 | - 71⅞ | -.71875 | 11-16 | .044531250 | 1 6⅞ | 1.06875 |
| 1- 4 | .030208333 | - 72½ | -.72500 | 3- 4 | .044791667 | 1 7½ | 1.07500 |
| 5-16 | .030468750 | - 73⅛ | -.73125 | 13-16 | .045052083 | 1 8⅛ | 1.08125 |
| 3- 8 | .030729167 | - 73¾ | -.73750 | 7- 8 | .045312500 | 1 8¾ | 1.08750 |
| 7-16 | .030989583 | - 74⅜ | -.74375 | 15-16 | .045572917 | 1 9⅜ | 1.09375 |
| 1- 2 | .031250000 | - 75 | -.75000 | 0 11 | .045833333 | 1 10 | 1.10000 |
| 9-16 | .031510417 | - 75⅝ | -.75625 | 1-16 | .046093750 | 1 10⅝ | 1.10625 |
| 5- 8 | .031770833 | - 76¼ | -.76250 | 1- 8 | .046354167 | 1 11¼ | 1.11250 |
| 11-16 | .032031250 | - 76⅞ | -.76875 | 3-16 | .046014583 | 1 11⅞ | 1.11875 |
| 3- 4 | .032291667 | - 77½ | -.77500 | 1- 4 | .046875000 | 1 12½ | 1.12500 |
| 13-16 | .032552083 | - 78⅛ | -.78125 | 5-16 | .047135417 | 1 13⅛ | 1.13125 |
| 7- 8 | .032812500 | - 78¾ | -.78750 | 3- 8 | .047395833 | 1 13¾ | 1.13750 |
| 15-16 | .033072917 | - 79⅜ | -.79375 | 7-16 | .047656250 | 1 14⅜ | 1.14375 |
| 0 8 | .033333333 | - 80 | -.80000 | 1- 2 | .047916667 | 1 15 | 1.15000 |
| 1-16 | .033593750 | - 80⅝ | -.80625 | 9-16 | .048177083 | 1 15⅝ | 1.15625 |
| 1- 8 | .033854167 | - 81¼ | -.81250 | 5- 8 | .048437500 | 1 16¼ | 1.16250 |
| 3-16 | .034114583 | - 81⅞ | -.81875 | 11-16 | .048697917 | 1 16⅞ | 1.16875 |
| 1- 4 | .034375000 | - 82½ | -.82250 | 3- 4 | .048958333 | 1 17½ | 1.17500 |
| 5-16 | .034635417 | - 83⅛ | -.83125 | 13-16 | .049218750 | 1 18⅛ | 1.18125 |
| 3- 8 | .034895833 | - 83¾ | -.83750 | 7- 8 | .049479167 | 1 18¾ | 1.18750 |
| 7- 16 | .035156250 | - 84⅜ | -.84375 | 15-16 | .049739583 | 1 19⅜ | 1.19375 |
| 1- 2 | .035416667 | - 85 | -.85000 | 1 0 | .050000000 | 1 20 | 1.20000 |
| 9-16 | .035677083 | - 85⅝ | -.85625 | 1- 4 | .051041667 | 1 22½ | 1.22500 |
| 5- 8 | .035937500 | - 86¼ | -.86250 | 1- 2 | .052083333 | 1 25 | 1.25000 |
| 11-16 | .036197917 | - 86⅞ | -.86875 | 3- 4 | .053125000 | 1 27½ | 1.27500 |
| 3- 4 | .036458333 | - 87½ | -.87500 | 1 1 | .054166667 | 1 30 | 1.30000 |
| 13-16 | .036718750 | - 88⅛ | -.88125 | 1- 4 | .055208333 | 1 32½ | 1.32500 |
| 7- 8 | .036979167 | - 88¾ | -.88750 | 1- 2 | .056250000 | 1 35 | 1.35000 |
| 15-16 | .037239583 | - 89⅜ | -.89375 | 3- 4 | .057291667 | 1 37½ | 1.37500 |
| 0 9 | .037500000 | - 90 | -.90000 | 1 2 | .058333333 | 1 40 | 1.40000 |
| 1-16 | .037760417 | - 90⅝ | -.90625 | 1- 4 | .059375000 | 1 42½ | 1.42500 |
| 1- 8 | .038020833 | - 91¼ | -.91250 | 1- 2 | .060416667 | 1 45 | 1.45000 |
| 3-16 | .038281250 | - 91⅞ | -.91875 | 3- 4 | .061458333 | 1 47½ | 1.47500 |
| 1- 4 | .038541667 | - 92½ | -.92500 | 1 3 | .062500000 | 1 50 | 1.50000 |
| 5-16 | .038802083 | - 93⅛ | -.93125 | 1- 4 | .063541667 | 1 52½ | 1.52500 |
| 3- 8 | .039062500 | - 93¾ | -.93750 | 1- 2 | .064583333 | 1 55 | 1.55000 |
| 7-16 | .039322917 | - 94⅜ | -.94375 | 3- 4 | .065625000 | 1 57½ | 1.57500 |
| 1- 2 | .039583333 | - 95 | -.95000 | 1 4 | .066666667 | 1 60 | 1.60000 |
| 9-16 | .039843750 | - 95⅝ | -.95625 | 1- 4 | .067708333 | 1 62½ | 1.62500 |
| 5- 8 | .040104167 | - 96¼ | -.96250 | 1- 2 | .068750000 | 1 65 | 1.65000 |
| 11-16 | .040364583 | - 96⅞ | -.96875 | 3- 4 | .069791667 | 1 67½ | 1.67500 |
| 3- 4 | .040625000 | - 97½ | -.97500 | 1 5 | .070833333 | 1 70 | 1.70000 |
| 13-16 | .040885417 | - 98⅛ | -.98125 | 1- 4 | .071875000 | 1 72½ | 1.72500 |
| 7- 8 | .041145833 | - 98¾ | -.98750 | 1- 2 | .072916667 | 1 75 | 1.75000 |
| 15-16 | .041406250 | - 99⅜ | -.99375 | 3- 4 | .073958333 | 1 77½ | 1.77500 |
| 0 10 | .041666667 | 1 0 | 1.00000 | 1 6 | .075000000 | 1 80 | 1.80000 |
| 1-16 | .041927083 | 1 0⅝ | 1.00625 | 1- 4 | .076041667 | 1 82½ | 1.82500 |
| 1- 8 | .042187500 | 1 1¼ | 1.01250 | 1- 2 | .077083333 | 1 85 | 1.85000 |
| 3-16 | .042447917 | 1 1⅞ | 1.01875 | 3- 4 | .078125000 | 1 87½ | 1.87500 |
| 1- 4 | .042708333 | 1 2½ | 1.02500 | 1 7 | .079166667 | 1 90 | 1.90000 |
| 5-16 | .042968750 | 1 3⅛ | 1.03125 | 1 4 | .080208333 | 1 92½ | 1.92500 |
| 3- 8 | .043229167 | 1 3¾ | 1.03750 | 1 2 | .081250000 | 1 95 | 1.95000 |
| 7-16 | .043489583 | 1 4⅜ | 1.04375 | 3 4 | .082291667 | 1 97½ | 1.97500 |

# TABLE I.—Showing Merchandize per Yard, Piece, Dozen, lb., &c., in Sterling and Decimals of the £., and Equivalents in Tenpennies.

| | Sterling. | Tenpennies. | | | Sterling. | Tenpennies. | |
|---|---|---|---|---|---|---|---|
| Yard, Piece, Dozen, lb. | 1 to 1 Million Yards, Pieces, Dozens, lbs., &c. | Yards, Piece, Dozen, lb. | 1 to 1000 Yards, Pieces, &c. | Yard, Piece, Dozen, lb. | 1 to 1 Million Yards, Pieces, Dozens, lbs., &c. | Yard, Piece, Dozen, &c. | 1 to 1000 Yards, Pieces, &c. |
| S. D. | £ | Tenp. Ct. | Tenp. | S. D. | £ | Tenp. Ct. | Tenp. |
| 1 8 | .083333333 | 2 0 | 2.00000 | 2 9 | .137500000 | 3 30 | 3.30000 |
| 1- 4 | .084375000 | 2 2½ | 2.02500 | 1- 4 | .138541667 | 3 32½ | 3.32500 |
| 1- 2 | .085416667 | 2 5 | 2.05000 | 1- 2 | .139583333 | 3 35 | 3.35000 |
| 3- 4 | .086458333 | 2 7½ | 2.07500 | 3- 4 | .140625000 | 3 37½ | 3.37500 |
| 1 9 | .087500000 | 2 10 | 2.10000 | 2 10 | .141666667 | 3 40 | 3.40000 |
| 1- 4 | .088541667 | 2 12½ | 2.12500 | 1- 4 | .142708333 | 3 42½ | 3.42500 |
| 1- 2 | .089583333 | 2 15 | 2.15000 | 1- 2 | .143750000 | 3 45 | 3.45000 |
| 3- 4 | .090625000 | 2 17½ | 2.17500 | 3- 4 | .144791667 | 3 47½ | 3.47500 |
| 1 10 | .091666667 | 2 20 | 2.20000 | 2 11 | .145833333 | 3 50 | 3.50000 |
| 1- 4 | .092708333 | 2 22½ | 2.22500 | 1- 4 | .146875000 | 3 52½ | 3.52500 |
| 1- 2 | .093750000 | 2 25 | 2.25000 | 1- 2 | .147916667 | 3 55 | 3.55000 |
| 3- 4 | .094791667 | 2 27½ | 2.27500 | 3- 4 | .148958333 | 3 57½ | 3.57500 |
| 1 11 | .095833333 | 2 30 | 2.30000 | 3 0 | .150000000 | 3 60 | 3.60000 |
| 1- 4 | .096875000 | 2 32½ | 2.32500 | 1- 4 | .151041667 | 3 62½ | 3.62500 |
| 1- 2 | .097916667 | 2 35 | 2.35000 | 1- 2 | .152083333 | 3 65 | 3.65000 |
| 3- 4 | .098958333 | 2 37½ | 2.37500 | 3- 4 | .153125000 | 3 67½ | 3.67500 |
| 2 0 | .100000000 | 2 40 | 2.40000 | 3 1 | .154166667 | 3 70 | 3.70000 |
| 1- 4 | .101041667 | 2 42½ | 2.42500 | 1- 4 | .155208333 | 3 72½ | 3.72500 |
| 1- 2 | .102083333 | 2 45 | 2.45000 | 1- 2 | .156250000 | 3 75 | 3.75000 |
| 3- 4 | .103125000 | 2 47½ | 2.47500 | 3- 4 | .157291667 | 3 77½ | 3.77500 |
| 2 1 | .104166667 | 2 50 | 2.50000 | 3 2 | .158333333 | 3 80 | 3.80000 |
| 1- 4 | .105208333 | 2 52½ | 2.52500 | 1- 4 | .159375000 | 3 82½ | 3.82500 |
| 1- 2 | .106250000 | 2 55 | 2.55000 | 1- 2 | .160416667 | 3 85 | 3.85000 |
| 3- 4 | .107291667 | 2 57½ | 2.57500 | 3- 4 | .161458333 | 3 87½ | 3.87500 |
| 2 2 | .108333333 | 2 60 | 2.60000 | 3 3 | .162500000 | 3 90 | 3.90000 |
| 1- 4 | .109375000 | 2 62½ | 2.62500 | 1- 4 | .163541667 | 3 92½ | 3.92500 |
| 1- 2 | .110416667 | 2 65 | 2.65000 | 1- 2 | .164583333 | 3 95 | 3.95000 |
| 3- 4 | .111458333 | 2 67½ | 2.67500 | 3- 4 | .165625000 | 3 97½ | 3.97500 |
| 2 3 | .112500000 | 2 70 | 2.70000 | 3 4 | .166666667 | 4 0 | 4.00000 |
| 1- 4 | .113541667 | 2 72½ | 2.72500 | 1- 4 | .167708333 | 4 2½ | 4.02500 |
| 1- 2 | .114583333 | 2 75 | 2.75000 | 1- 2 | .168750000 | 4 5 | 4.05000 |
| 3- 4 | .115625000 | 2 77½ | 2.77500 | 3- 4 | .169791667 | 4 7½ | 4.07500 |
| 2 4 | .116666667 | 2 80 | 2.80000 | 3 5 | .170833333 | 4 10 | 4.10000 |
| 1- 4 | .117708333 | 2 82½ | 2.82500 | 1- 4 | .171875000 | 4 12½ | 4.12500 |
| 1- 2 | .118750000 | 2 85 | 2.85000 | 1- 2 | .172916667 | 4 15 | 4.15000 |
| 3- 4 | .119791667 | 2 87½ | 2.87500 | 3- 4 | .173958333 | 4 17½ | 4.17500 |
| 2 5 | .120833333 | 2 90 | 2.90000 | 3 6 | .175000000 | 4 20 | 4.20000 |
| 1- 4 | 121875000 | 2 92½ | 2.92500 | 1- 4 | .176041667 | 4 22½ | 4.22500 |
| 1- 2 | .122916667 | 2 95 | 2.95000 | 1- 2 | .177083333 | 4 25 | 4.25000 |
| 3- 4 | .123958333 | 2 97½ | 2.97500 | 3- 4 | .178125000 | 4 27½ | 4.27500 |
| 2 6 | .125000000 | 3 0 | 3.00000 | 3 7 | .179166667 | 4 30 | 4.30000 |
| 1- 4 | .126041667 | 3 2½ | 3.02500 | 1- 4 | .180208333 | 4 32½ | 4.32500 |
| 1- 2 | .127083333 | 3 5 | 3.05000 | 1- 2 | .181250000 | 4 35 | 4.35000 |
| 3- 4 | .128125000 | 3 7½ | 3.07500 | 3- 4 | .182291667 | 4 37½ | 4.37500 |
| 2 7 | .129166667 | 3 10 | 3.10000 | 3 8 | .183333333 | 4 40 | 4.40000 |
| 1- 4 | .130208333 | 3 12½ | 3.12500 | 1- 4 | .184375000 | 4 42½ | 4.42500 |
| 1- 2 | .131250000 | 3 15 | 3.15000 | 1- 2 | .185416667 | 4 45 | 4.45000 |
| 3- 4 | .132291667 | 3 17½ | 3.17500 | 3- 4 | .186458333 | 4 47½ | 4.47500 |
| 2 8 | .133333333 | 3 20 | 3.20000 | 3 9 | .187500000 | 4 50 | 4.50000 |
| 1- 4 | .134375000 | 3 22½ | 3.22500 | 1- 4 | .188541667 | 4 52½ | 4.52500 |
| 1- 2 | .135416667 | 3 25 | 3.25000 | 1- 2 | .189583333 | 4 55 | 4.55000 |
| 3- 4 | .136458333 | 3 27½ | 3.27500 | 3- 4 | .190625000 | 4 57½ | 4.57500 |

## TABLE I.—Showing Merchandize per Yard, Piece, Dozen, lb., &c., in Sterling and Decimals of the £., and Equivalents in Tenpennies.

| Yard, Piece, Dozen, lb. | STERLING. | TENPENNIES. | |
|---|---|---|---|
| | 1 to 1 Million Yards, Pieces, Dozens, lbs., &c. | Yard, Piece, Dozen, lb. | 1 to 1000 Yards, Pieces, &c. |
| S. D. | £ | Tenp. Ct. | Tenp. |
| 3 10 | .191666667 | 4 60 | 4.60000 |
| 1- 4 | .192708333 | 4 62½ | 4.62500 |
| 1- 2 | .193750000 | 4 65 | 4.65000 |
| 3- 4 | .194791667 | 4 67½ | 4.67500 |
| 3 11 | .195833333 | 4 70 | 4.70000 |
| 1- 4 | .196875000 | 4 72½ | 4.72500 |
| 1- 2 | .197916667 | 4 75 | 4.75000 |
| 3- 4 | .198958333 | 4 77½ | 4.77500 |
| 4 0 | .200000000 | 4 80 | 4.80000 |
| 1- 4 | .201041667 | 4 82½ | 4.82500 |
| 1- 2 | .202083333 | 4 85 | 4.85000 |
| 3- 4 | .203125000 | 4 87½ | 4.87500 |
| 4 1 | .204166667 | 4 90 | 4.90000 |
| 1- 4 | .205208333 | 4 92½ | 4.92500 |
| 1- 2 | .206250000 | 4 95 | 4.95000 |
| 3- 4 | .207291667 | 4 97½ | 4.97500 |
| 4 2 | .208333333 | 5 0 | 5.00000 |
| 1- 4 | .209375000 | 5 2½ | 5.02500 |
| 1- 2 | .210416667 | 5 5 | 5.05000 |
| 3- 4 | .211458333 | 5 7½ | 5.07500 |
| 4 3 | .212500000 | 5 10 | 5.10000 |
| 1- 4 | .213541667 | 5 12½ | 5.12500 |
| 1- 2 | .214583333 | 5 15 | 5.15000 |
| 3- 4 | .215625000 | 5 17½ | 5.17500 |
| 4 4 | .216666667 | 5 20 | 5.20000 |
| 1- 4 | .217708333 | 5 22½ | 5.22500 |
| 1- 2 | .218750000 | 5 25 | 5.25000 |
| 3- 4 | .219791667 | 5 27½ | 5.27500 |
| 4 5 | .220833333 | 5 30 | 5.30000 |
| 1- 4 | .221875000 | 5 32½ | 5.32500 |
| 1- 2 | .222916667 | 5 35 | 5.35000 |
| 3- 4 | .223958333 | 5 37½ | 5.37500 |
| 4 6 | .225000000 | 5 40 | 5.40000 |
| 1- 4 | .226041667 | 5 42½ | 5.42500 |
| 1- 2 | .227083333 | 5 45 | 5.45000 |
| 3- 4 | .228125000 | 5 47½ | 5.47500 |
| 4 7 | .229166667 | 5 50 | 5.50000 |
| 1- 4 | .230208333 | 5 52½ | 5.52500 |
| 1- 2 | .231250000 | 5 55 | 5.55000 |
| 3- 4 | .232291667 | 5 57½ | 5.57500 |
| 4 8 | .233333333 | 5 60 | 5.60000 |
| 1- 4 | .234375000 | 5 62½ | 5.62500 |
| 1- 2 | .235416667 | 5 65 | 5.65000 |
| 3- 4 | .236458333 | 5 67½ | 5.67500 |
| 4 9 | .237500000 | 5 70 | 5.70000 |
| 1- 4 | .238541667 | 5 72½ | 5.72500 |
| 1- 2 | .239583333 | 5 75 | 5.75000 |
| 3- 4 | .240625000 | 5 77½ | 5.77500 |
| 4 10 | .241666667 | 5 80 | 5.80000 |
| 1- 4 | .242708333 | 5 82½ | 5.82500 |
| 1- 2 | .243750000 | 5 85 | 5.85000 |
| 3- 4 | .244791667 | 5 87½ | 5.87500 |

| Yard, Piece, Dozen, lb. | STERLING. | TENPENNIES. | |
|---|---|---|---|
| | 1 to 1 Million Yards, Pieces, Dozens, lbs., &c. | Yard, Piece, Dozen, lb. | 1 to 1000 Yards, Pieces, &c. |
| S. D. | £ | Tenp. | Tenp. |
| 4 11 | .245833333 | 5 90 | 5.99000 |
| 1- 4 | .246875000 | 5 92½ | 5.92500 |
| 1- 2 | .247916667 | 5 95 | 5.95000 |
| 3- 4 | .248958333 | 5 97½ | 5.95700 |
| 5 0 | .250000000 | 6 0 | 6.00000 |
| 5 1 | .254166667 | 6 10 | 6.10000 |
| 5 2 | .258333333 | 6 20 | 6.20000 |
| 5 3 | .262500000 | 6 30 | 6.30000 |
| 5 4 | .266666667 | 6 40 | 6.40000 |
| 5 5 | .270833333 | 6 50 | 6.50000 |
| 5 6 | .275000000 | 6 60 | 6.60000 |
| 5 7 | .279166667 | 6 70 | 6.70000 |
| 5 8 | .283333333 | 6 80 | 6.80000 |
| 5 9 | .287500000 | 6 90 | 6.90000 |
| 5 10 | .291666667 | 7 0 | 7.00000 |
| 5 11 | .295833333 | 7 10 | 7.10000 |
| 6 0 | .300000000 | 7 20 | 7.20000 |
| 6 1 | .304166667 | 7 30 | 7.30000 |
| 6 2 | .308333333 | 7 40 | 7.40000 |
| 6 3 | .312500000 | 7 50 | 7.50000 |
| 6 4 | .316666667 | 7 60 | 7.60000 |
| 6 5 | .320833333 | 7 70 | 7.70000 |
| 6 6 | .325000000 | 7 80 | 7.80000 |
| 6 7 | .329166667 | 7 90 | 7.90000 |
| 6 8 | .333333333 | 8 0 | 8.00000 |
| 6 9 | .337500000 | 8 10 | 8.10000 |
| 6 10 | .341666667 | 8 20 | 8.20000 |
| 6 11 | .345833333 | 8 30 | 8.30000 |
| 7 0 | .350000000 | 8 40 | 8.40000 |
| 7 1 | .354166667 | 8 50 | 8.50000 |
| 7 2 | .358333333 | 8 60 | 8.60000 |
| 7 3 | .362500000 | 8 70 | 8.70000 |
| 7 4 | .366666667 | 8 80 | 8.80000 |
| 7 5 | .370833333 | 8 90 | 8.90000 |
| 7 6 | .375000000 | 9 0 | 9.00000 |
| 7 7 | .379166667 | 9 10 | 9.10000 |
| 7 8 | .383333333 | 9 20 | 9.20000 |
| 7 9 | .387500000 | 9 30 | 9.30000 |
| 7 10 | .391666667 | 9 40 | 9.40000 |
| 7 11 | .395833333 | 9 50 | 9.50000 |
| 8 0 | .400000000 | 9 60 | 9.60000 |
| 8 1 | .404166667 | 9 70 | 9.70000 |
| 8 2 | .408333333 | 9 80 | 9.80000 |
| 8 3 | .412500000 | 9 90 | 9.90000 |
| 8 4 | .416666967 | 10 0 | 10.00000 |
| 8 5 | .420833333 | 10 10 | 10.10000 |
| 8 6 | .425000000 | 10 20 | 10.20000 |
| 8 7 | .429166667 | 10 30 | 10.30000 |
| 8 8 | .433333333 | 10 40 | 10.40000 |
| 8 9 | .437500000 | 10 50 | 10.50000 |
| 8 10 | .441666667 | 10 60 | 10.60000 |
| 8 11 | .445833333 | 10 70 | 10.70000 |
| 9 0 | .450000000 | 10 80 | 10.80000 |
| 9 1 | .454166667 | 10 90 | 10.90000 |
| 9 2 | .458333333 | 11 0 | 11.00000 |
| 9 3 | .462500000 | 11 10 | 11.10000 |
| 9 4 | .466666697 | 11 20 | 11.20000 |
| 9 5 | 4708333333 | 11 30 | 11.30000 |

## TABLE I.—Showing Merchandize per Yard, Piece, Dozen, lb., &c., in Sterling and Decimals of the £., and Equivalents in Tenpennies.

| | | Sterling. | Tenpennies. | | | | | Sterling. | Tenpennies. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Yard, Piece, Dozen, lb. | | 1 to 1 Million Yards, Pieces, Dozens, lbs., &c. | Yard, Piece, Dozen, lb. | | 1 to 1000 Yards, Pieces, &c. | Yard, Piece, Dozen, lb. | | 1 to 1 Million Yards, Pieces, Dozens, lbs., &c. | Yard, Piece, Dozen, lb. | | 1 to 1000 Yards, Pieces, &c. |
| S. | D. | £ | Tenp. | Ct. | Tenp. | S. | D. | £ | Tenp. | Ct. | Tenp. |
| 9 | 6 | .475000000 | 11 | 40 | 11.40000 | 14 | 4 | .716666667 | 17 | 20 | 17.20000 |
| 9 | 7 | .479166667 | 11 | 50 | 11.50000 | 14 | 5 | .720833333 | 17 | 30 | 17.30000 |
| 9 | 8 | .483333333 | 11 | 60 | 11.60000 | 14 | 6 | .725000000 | 17 | 40 | 17.40000 |
| 9 | 9 | .487500000 | 11 | 70 | 11.70000 | 14 | 7 | .729166667 | 17 | 50 | 17.50000 |
| 9 | 10 | .491666667 | 11 | 80 | 11.80000 | 14 | 8 | .733333333 | 17 | 60 | 17.60000 |
| 9 | 11 | .495833333 | 11 | 90 | 11.90000 | 14 | 9 | .737500000 | 17 | 70 | 17.70000 |
| 10 | 0 | .500000000 | 12 | 0 | 12.00000 | 14 | 10 | .741666667 | 17 | 80 | 17.80000 |
| 10 | 1 | .504166667 | 12 | 10 | 12.10000 | 14 | 11 | .745833333 | 17 | 90 | 17.90000 |
| 10 | 2 | .508333333 | 12 | 20 | 12.20000 | 15 | 0 | .750000000 | 18 | 0 | 18.00000 |
| 10 | 3 | .512500000 | 12 | 30 | 12.30000 | 15 | 1 | .754166667 | 18 | 10 | 18.10000 |
| 10 | 4 | .516666667 | 12 | 40 | 12.40000 | 15 | 2 | .758333333 | 18 | 20 | 18.20000 |
| 10 | 5 | .520833333 | 12 | 50 | 12.50000 | 15 | 3 | .762500000 | 18 | 30 | 18.30000 |
| 10 | 6 | .525000000 | 12 | 60 | 12.60000 | 15 | 4 | .766666667 | 18 | 40 | 18.40000 |
| 10 | 7 | .529166667 | 12 | 70 | 12.70000 | 15 | 5 | .770833333 | 18 | 50 | 18.50000 |
| 10 | 8 | .533333333 | 12 | 80 | 12.80000 | 15 | 6 | .775000000 | 18 | 60 | 18.60000 |
| 10 | 9 | .537500000 | 12 | 90 | 12.90000 | 15 | 7 | .779166667 | 18 | 70 | 18.70000 |
| 10 | 10 | .541666667 | 13 | 0 | 13.00000 | 15 | 8 | .783333333 | 18 | 80 | 18.80000 |
| 10 | 11 | .545833333 | 13 | 10 | 13.10000 | 15 | 9 | .787500000 | 18 | 90 | 18.90000 |
| 11 | 0 | .550000000 | 13 | 20 | 13.20000 | 15 | 10 | .791666667 | 19 | 0 | 19.00000 |
| 11 | 1 | .504166667 | 13 | 30 | 13.30000 | 15 | 11 | .795833333 | 19 | 10 | 19.10000 |
| 11 | 2 | .508333333 | 13 | 40 | 13.40000 | 16 | 0 | .800000000 | 19 | 20 | 19.20000 |
| 11 | 3 | .512500000 | 13 | 50 | 13.50000 | 16 | 1 | .804166667 | 19 | 30 | 19.30000 |
| 11 | 4 | .516666667 | 13 | 60 | 13.60000 | 16 | 2 | .808333333 | 19 | 40 | 19.40000 |
| 11 | 5 | .520833333 | 13 | 70 | 13.70000 | 16 | 3 | .812500000 | 19 | 50 | 19.50000 |
| 11 | 6 | .525000000 | 13 | 80 | 13.80000 | 16 | 4 | .816666667 | 19 | 60 | 19.60000 |
| 11 | 7 | .529166667 | 13 | 90 | 13.90000 | 16 | 5 | .820833333 | 19 | 70 | 19.70000 |
| 11 | 8 | .533333333 | 14 | 0 | 14.00000 | 16 | 6 | .825000000 | 19 | 80 | 19.80000 |
| 11 | 9 | .537500000 | 14 | 10 | 14.10000 | 16 | 7 | .829166667 | 19 | 90 | 19.90000 |
| 11 | 10 | .541666667 | 14 | 20 | 14.20000 | 16 | 8 | .833333333 | 20 | 0 | 20.00000 |
| 11 | 11 | .545833333 | 14 | 30 | 14.30000 | 16 | 9 | .837500000 | 20 | 10 | 20.10000 |
| 12 | 0 | .600000000 | 14 | 40 | 14.40000 | 16 | 10 | .841666667 | 20 | 20 | 20.20000 |
| 12 | 1 | .604166667 | 14 | 50 | 14.50000 | 16 | 11 | .845833333 | 20 | 30 | 20.30000 |
| 12 | 2 | .608333333 | 14 | 60 | 14.60000 | 17 | 0 | .850000000 | 20 | 40 | 20.40000 |
| 12 | 3 | .612500000 | 14 | 70 | 14.70000 | 17 | 1 | .854166667 | 20 | 50 | 20.50000 |
| 12 | 4 | .616666667 | 14 | 80 | 14.80000 | 17 | 2 | .858333333 | 20 | 60 | 20.60000 |
| 12 | 5 | .620833333 | 14 | 90 | 14.90000 | 17 | 3 | .862500000 | 20 | 70 | 20.70000 |
| 12 | 6 | .625000000 | 15 | 0 | 15.00000 | 17 | 4 | .866666967 | 20 | 80 | 20.80000 |
| 12 | 7 | .629166667 | 15 | 10 | 15.10000 | 17 | 5 | .870833333 | 20 | 90 | 20.90000 |
| 12 | 8 | .633333333 | 15 | 20 | 15.20000 | 17 | 6 | .875000000 | 21 | 0 | 21.00000 |
| 12 | 9 | .637500000 | 15 | 30 | 15.30000 | 17 | 7 | .879166667 | 21 | 10 | 21.10000 |
| 12 | 10 | .641666667 | 15 | 40 | 15.40000 | 17 | 8 | .883333333 | 21 | 20 | 21.20000 |
| 12 | 11 | .645833333 | 15 | 50 | 15.50000 | 17 | 9 | .887500000 | 21 | 30 | 21.30000 |
| 13 | 0 | .650000000 | 15 | 60 | 15.60000 | 17 | 10 | .891666667 | 21 | 40 | 21.40000 |
| 13 | 1 | .654166667 | 15 | 70 | 15.70000 | 17 | 11 | .895833333 | 21 | 50 | 21.50000 |
| 13 | 2 | .658333333 | 15 | 80 | 15.80000 | 18 | 0 | .900000000 | 21 | 60 | 21.60000 |
| 13 | 3 | .662500000 | 15 | 90 | 15.90000 | 18 | 1 | .904166667 | 21 | 70 | 21.70000 |
| 13 | 4 | .666666667 | 16 | 0 | 16.00000 | 18 | 2 | .908333333 | 21 | 80 | 21.80000 |
| 13 | 5 | .670833333 | 16 | 10 | 16.10000 | 18 | 3 | .912500000 | 21 | 90 | 21.90000 |
| 13 | 6 | .675000000 | 16 | 20 | 16.20000 | 18 | 4 | .916666667 | 22 | 0 | 22.00000 |
| 13 | 7 | .679166667 | 16 | 30 | 16.30000 | 18 | 5 | .920833333 | 22 | 10 | 22.10000 |
| 13 | 8 | .683333333 | 16 | 40 | 16.40000 | 18 | 6 | .925000000 | 22 | 20 | 22.20000 |
| 13 | 9 | .687500000 | 16 | 50 | 16.50000 | 18 | 7 | .929166667 | 22 | 30 | 22.30000 |
| 13 | 10 | .691666667 | 16 | 60 | 16.60000 | 18 | 8 | .933333333 | 22 | 40 | 22.40000 |
| 13 | 11 | .695833333 | 16 | 70 | 16.70000 | 18 | 9 | .937500000 | 22 | 50 | 22.50000 |
| 14 | 0 | .700000000 | 16 | 80 | 16.80000 | 18 | 10 | .941666667 | 22 | 60 | 22.60000 |
| 14 | 1 | .704166667 | 16 | 90 | 16.90000 | 18 | 11 | .945833333 | 22 | 70 | 22.70000 |
| 14 | 2 | .708333333 | 17 | 0 | 17.00000 | 19 | 0 | .950000000 | 22 | 80 | 22.80000 |
| 14 | 3 | .712500000 | 17 | 10 | 17.10000 | 19 | 1 | .954166667 | 22 | 90 | 22.90000 |

## TABLE I.—Showing Merchandize per Yard, Piece, Dozen, lb., &c., in Sterling and Decimals of the £., and Equivalents in Tenpennies.

| Yard, Piece, Dozen, lb. | Sterling. | Tenpennies. | | Yard, Piece, Dozen, lb. | Sterling. | Tenpennies. | |
|---|---|---|---|---|---|---|---|
| | 1 to 1 Million Yards, Pieces, Dozens, lbs., &c. | Yard, Piece, Dozen, lb. | 1 to 1000 Yards, Pieces, &c. | | 1 to 1 Million Yards, Pieces, Dozens, lbs., &c. | Yard, Piece, Dozen, lb. | 1 to 1000 Yards, Pieces, &c. |
| S. D. | £ | Tenp. Ct. | Tenp. | £ | £ | Tenp. | Tenp. |
| 19 2 | .958333333 | 23 0 | 23.00000 | 49 | 49.000000000 | 1176 | 1176.00000 |
| 19 3 | .962500000 | 23 10 | 23.10000 | 50 | 50.000000000 | 1200 | 1200.00000 |
| 19 4 | .966666667 | 23 20 | 23.20000 | 51 | 51.000000000 | 1224 | 1224.00000 |
| 19 5 | .970833333 | 23 30 | 23.30000 | 52 | 52.000000000 | 1248 | 1248.00000 |
| 19 6 | .975000000 | 23 40 | 23.40000 | 53 | 53.000000000 | 1272 | 1272.00000 |
| 19 7 | .979166667 | 23 50 | 23.50000 | 54 | 54.000000000 | 1296 | 1296.00000 |
| 19 8 | .983333333 | 23 60 | 23.60000 | 55 | 55.000000000 | 1320 | 1320.00000 |
| 19 9 | .987500000 | 23 70 | 23.70000 | 56 | 56.000000000 | 1344 | 1344.00000 |
| 19 10 | .991666667 | 23 80 | 23.80000 | 57 | 57.000000000 | 1368 | 1368.00000 |
| 19 11 | .995833333 | 23 90 | 23.90000 | 58 | 58.000000000 | 1392 | 1392.00000 |
| £1 | 1.000000000 | 24 | 24.00000 | 59 | 59.000000000 | 1416 | 1416.00000 |
| 2 | 2.000000000 | 48 | 48.00000 | 60 | 60.000000000 | 1440 | 1440.00000 |
| 3 | 3.000000000 | 72 | 72.00000 | 61 | 61.000000000 | 1464 | 1464.00000 |
| 4 | 4.000000000 | 96 | 96.00000 | 62 | 62.000000000 | 1488 | 1488.00000 |
| 5 | 5.000000000 | 120 | 120.00000 | 63 | 63.000000000 | 1512 | 1512.00000 |
| 6 | 6.000000000 | 144 | 144.00000 | 64 | 64.000000000 | 1536 | 1536.00000 |
| 7 | 7.000000000 | 168 | 168.00000 | 65 | 65.000000000 | 1560 | 1560.00000 |
| 8 | 8.000000000 | 192 | 192.00000 | 66 | 66.000000000 | 1584 | 1584.00000 |
| 9 | 9.000000000 | 216 | 216.00000 | 67 | 67.000000000 | 1608 | 1608.00000 |
| 10 | 10.000000000 | 240 | 240.00000 | 68 | 68.000000000 | 1632 | 1632.00000 |
| 11 | 11.000000000 | 264 | 264.00000 | 69 | 69.000000000 | 1656 | 1656.00000 |
| 12 | 12.000000000 | 288 | 288.00000 | 70 | 70.000000000 | 1680 | 1680.00000 |
| 13 | 13.000000000 | 312 | 312.00000 | 71 | 71.000000000 | 1704 | 1704.00000 |
| 14 | 14.000000000 | 336 | 336.00000 | 72 | 72.000000000 | 1728 | 1728.00000 |
| 15 | 15.000000000 | 360 | 360.00000 | 73 | 73.000000000 | 1752 | 1752.00000 |
| 16 | 16.000000000 | 384 | 384.00000 | 74 | 74.000000000 | 1776 | 1776.00000 |
| 17 | 17.000000000 | 408 | 408.00000 | 75 | 75.000000000 | 1800 | 1800.00000 |
| 18 | 18.000000000 | 432 | 432.00000 | 76 | 76.000000000 | 1824 | 1824.00000 |
| 19 | 19.000000000 | 456 | 456.00000 | 77 | 77.000000000 | 1848 | 1848.00000 |
| 20 | 20.000000000 | 480 | 480.00000 | 78 | 78.000000000 | 1872 | 1872.00000 |
| 21 | 21.000000000 | 504 | 504.00000 | 79 | 79.000000000 | 1896 | 1896.00000 |
| 22 | 22.000000000 | 528 | 528.00000 | 80 | 80.000000000 | 1920 | 1920.00000 |
| 23 | 23.000000000 | 552 | 552.00000 | 81 | 81.000000000 | 1944 | 1944.00000 |
| 24 | 24.000000000 | 576 | 576.00000 | 82 | 82.000000000 | 1968 | 1968.00000 |
| 25 | 25.000000000 | 600 | 600.00000 | 83 | 83.000000000 | 1992 | 1992.00000 |
| 26 | 26.000000000 | 624 | 624.00000 | 84 | 84.000000000 | 2016 | 2016.00000 |
| 27 | 27.000000000 | 648 | 648.00000 | 85 | 85.000000000 | 2040 | 2040.00000 |
| 28 | 28.000000000 | 672 | 672.00000 | 86 | 86.000000000 | 2064 | 2064.00000 |
| 29 | 29.000000000 | 696 | 696.00000 | 87 | 87.000000000 | 2088 | 2088.00000 |
| 30 | 30.000000000 | 720 | 720.00000 | 88 | 88.000000000 | 2112 | 2112.00000 |
| 31 | 31.000000000 | 744 | 744.00000 | 89 | 89.000000000 | 2136 | 2136.00000 |
| 32 | 32.000000000 | 768 | 768.00000 | 90 | 90.000000000 | 2160 | 2160.00000 |
| 33 | 33.000000000 | 792 | 792.00000 | 91 | 91.000000000 | 2184 | 2184.00000 |
| 34 | 34.000000000 | 816 | 816.00000 | 92 | 92.000000000 | 2208 | 2208.00000 |
| 35 | 35.000000000 | 840 | 840.00000 | 93 | 93.000000000 | 2232 | 2232.00000 |
| 36 | 36.000000000 | 864 | 864.00000 | 94 | 94.000000000 | 2256 | 2256.00000 |
| 37 | 37.000000000 | 888 | 888.00000 | 95 | 95.000000000 | 2280 | 2280.00000 |
| 38 | 38.000000000 | 912 | 912.00000 | 96 | 96.000000000 | 2304 | 2304.00000 |
| 39 | 39.000000000 | 936 | 936.00000 | 97 | 97.000000000 | 2328 | 2328.00000 |
| 40 | 40.000000000 | 960 | 960.00000 | 98 | 98.000000000 | 2352 | 2352.00000 |
| 41 | 41.000000000 | 984 | 984.00000 | 99 | 99.000000000 | 2376 | 2376.00000 |
| 42 | 42.000000000 | 1008 | 1008.00000 | 100 | 100.000000000 | 2400 | 2400.00000 |
| 43 | 43.000000000 | 1032 | 1032.00000 | 200 | 200.000000000 | 4800 | 4800.00000 |
| 44 | 44.000000000 | 1056 | 1056.00000 | 300 | 300.000000000 | 7200 | 7200.00000 |
| 45 | 45.000000000 | 1080 | 1080.00000 | 400 | 400.000000000 | 9600 | 9600.00000 |
| 46 | 46.000000000 | 1104 | 1104.00000 | 500 | 500.000000000 | 12000 | 12000.00000 |
| 47 | 47.000000000 | 1128 | 1128.00000 | 1000 | 1000.000000000 | 24000 | 24000.00000 |
| 48 | 48.000000000 | 1152 | 1152.00000 | 2000 | 2000.000000000 | 48000 | 48000.00000 |

# TABLE II.—Showing Merchandize per Ton, Cwt., Qr., and Lb., in Sterling and Equivalents in Decimals of the £.,

| Ton. | | | Cwt. | | | Qr. | | | Lb. | | 1 to 10 Tons. | 1 to 100 Cwts. | 1 to 10 Qrs. | 1 to 1000 Lbs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| £ | S. | D. | S. | D. | F. | S. | D. | F. | F. | 112. | £ | £ | £ | £ |
| - | 1 | 3 | - | 0 | 3 | - | - | -¾ | - | 3 | -.0625 | -.00313 | .0008 | .000028 |
| - | 2 | 6 | - | 1 | 2 | - | - | 1½ | - | 6 | -.1250 | -.00625 | .0016 | .000056 |
| - | 3 | 9 | - | 2 | 1 | - | - | 2¼ | - | 9 | -.1875 | -.00938 | .0023 | .000084 |
| - | 5 | 0 | - | 3 | 0 | - | - | 3 | - | 12 | -.2500 | -.01250 | .0031 | .000112 |
| - | 6 | 3 | - | 3 | 3 | - | - | 3¾ | - | 15 | -.3125 | -.01563 | .0039 | .000140 |
| - | 7 | 6 | - | 4 | 2 | - | 1 | 0½ | - | 18 | -.3750 | -.01875 | .0047 | .000167 |
| - | 8 | 9 | - | 5 | 1 | - | 1 | 1¼ | - | 3-16 | -.4375 | -.02188 | .0055 | .000195 |
| - | 10 | 0 | - | 6 | 0 | - | 1 | 2 | - | 24 | -.5000 | -.02500 | .0063 | .000223 |
| - | 11 | 3 | - | 6 | 3 | - | 1 | 2¾ | - | 27 | -.5625 | -.02813 | .0070 | .000251 |
| - | 12 | 6 | - | 7 | 2 | - | 1 | 3½ | - | 30 | -.6250 | -.03125 | .0078 | .000279 |
| - | 13 | 9 | - | 8 | 1 | - | 2 | 0¼ | - | 33 | -.6875 | -.03438 | .0086 | .000307 |
| - | 15 | 0 | - | 9 | 0 | - | 2 | 1 | - | 36 | -.7500 | -.03750 | .0094 | .000335 |
| - | 16 | 3 | - | 9 | 3 | - | 2 | 1¾ | - | 39 | -.8125 | -.04063 | .0102 | .000363 |
| - | 17 | 6 | - | 10 | 2 | - | 2 | 2½ | - | 3-8 | -.8750 | -.04375 | .0109 | .000391 |
| - | 18 | 9 | - | 11 | 1 | - | 2 | 3¼ | - | 45 | -.9375 | -.04688 | .0117 | .000419 |
| 1 | 0 | 0 | 1 | 0 | 0 | - | 3 | 0 | - | 48 | 1.0000 | -.05000 | .0125 | .000446 |
| 1 | 1 | 3 | 1 | 0 | 3 | - | 3 | 0¾ | - | 51 | 1.0625 | -.05313 | .0133 | .000474 |
| 1 | 2 | 6 | 1 | 1 | 2 | - | 3 | 1½ | - | 54 | 1.1250 | -.05625 | .0141 | .000502 |
| 1 | 3 | 9 | 1 | 2 | 1 | - | 3 | 2¼ | - | 57 | 1.1875 | -.05938 | .0148 | .000530 |
| 1 | 5 | 0 | 1 | 3 | 0 | - | 3 | 3 | - | 60 | 1.2500 | -.06250 | .0156 | .000558 |
| 1 | 6 | 3 | 1 | 3 | 3 | - | 3 | 3¾ | - | 9-16 | 1.3125 | -.06563 | .0164 | .000586 |
| 1 | 7 | 6 | 1 | 4 | 2 | - | 4 | 0½ | - | 66 | 1.3750 | -.06875 | .0172 | .000614 |
| 1 | 8 | 9 | 1 | 5 | 1 | - | 4 | 1¼ | - | 69 | 1.4375 | -.07188 | .0180 | .000642 |
| 1 | 10 | 0 | 1 | 6 | 0 | - | 4 | 2 | - | 72 | 1.5000 | -.07500 | .0188 | .000670 |
| 1 | 11 | 3 | 1 | 6 | 3 | - | 4 | 2¾ | - | 75 | 1.5625 | -.07813 | .0195 | .000698 |
| 1 | 12 | 6 | 1 | 7 | 2 | - | 4 | 3½ | - | 78 | 1.6250 | -.08125 | .0203 | .000725 |
| 1 | 13 | 9 | 1 | 8 | 1 | - | 5 | 0¼ | - | 81 | 1.6875 | -.08438 | .0211 | .000753 |
| 1 | 15 | 0 | 1 | 9 | 0 | - | 5 | 1 | - | 3-4 | 1.7500 | -.08750 | .0219 | .000781 |
| 1 | 16 | 3 | 1 | 9 | 3 | - | 5 | 1¾ | - | 87 | 1.8125 | -.09063 | .0227 | .000809 |
| 1 | 17 | 6 | 1 | 10 | 2 | - | 5 | 2½ | - | 90 | 1.8750 | -.09375 | .0234 | .000837 |
| 1 | 18 | 9 | 1 | 11 | 1 | - | 5 | 3¼ | - | 93 | 1.9375 | -.09688 | .0242 | .000865 |
| 2 | 0 | 0 | 2 | 0 | 0 | - | 6 | 0 | - | 96 | 2.0000 | -.10000 | .0250 | .000893 |
| 2 | 1 | 3 | 2 | 0 | 3 | - | 6 | 0¾ | - | 99 | 2.0625 | -.10313 | .0258 | .000921 |
| 2 | 2 | 6 | 2 | 1 | 2 | - | 6 | 1½ | - | 102 | 2.1250 | -.10625 | .0266 | .000949 |
| 2 | 3 | 9 | 2 | 2 | 1 | - | 6 | 2¼ | - | 15-16 | 2.1875 | -.10938 | .0273 | .000977 |
| 2 | 5 | 0 | 2 | 3 | 0 | - | 6 | 3 | - | 108 | 2.2500 | -.11250 | .0281 | .001004 |
| 2 | 6 | 3 | 2 | 3 | 3 | - | 6 | 3¾ | - | 111 | 2.3125 | -.11563 | .0289 | .001032 |
| 2 | 10 | 0 | 2 | 6 | 0 | - | 7 | 2 | 1 | 8 | 2.5000 | -.12500 | .0313 | .001116 |
| 2 | 15 | 0 | 2 | 9 | 0 | - | 8 | 1 | 1 | 20 | 2.7500 | -.13750 | .0344 | .001228 |
| 3 | 0 | 0 | 3 | 0 | 0 | - | 9 | 0 | 1 | 32 | 3.0000 | -.15000 | .0375 | .001339 |
| 3 | 5 | 0 | 3 | 3 | 0 | - | 9 | 3 | 1 | 44 | 3.2500 | -.16250 | .0406 | .001451 |
| 3 | 10 | 0 | 3 | 6 | 0 | - | 10 | 2 | 1 | 1-2 | 3.5000 | -.17500 | .0438 | .001563 |
| 3 | 15 | 0 | 3 | 9 | 0 | - | 11 | 1 | 1 | 68 | 3.7500 | -.18750 | .0469 | .001674 |
| 4 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 0 | 1 | 80 | 4.0000 | -.20000 | .0500 | .001786 |
| 4 | 5 | 0 | 4 | 3 | 0 | 1 | 0 | 3 | 1 | 92 | 4.2500 | -.21250 | .0531 | .001897 |
| 4 | 10 | 0 | 4 | 6 | 0 | 1 | 1 | 2 | 1 | 104 | 4.5000 | -.22500 | .0563 | .002009 |
| 4 | 15 | 0 | 4 | 9 | 0 | 1 | 2 | 1 | 2 | 4 | 4.7500 | -.23750 | .0594 | .002121 |
| 5 | 0 | 0 | 5 | 0 | 0 | 1 | 3 | 0 | 2 | 16 | 5.0000 | -.25000 | .0625 | .002232 |
| 5 | 5 | 0 | 5 | 3 | 0 | 1 | 3 | 3 | 2 | 1-4 | 5.2500 | -.26250 | .0656 | .002344 |
| 5 | 10 | 0 | 5 | 6 | 0 | 1 | 4 | 2 | 2 | 40 | 5.5000 | -.27500 | .0688 | .002455 |
| 5 | 15 | 0 | 5 | 9 | 0 | 1 | 5 | 1 | 2 | 52 | 5.7500 | -.28750 | .0719 | .002567 |
| 6 | 0 | 0 | 6 | 0 | 0 | 1 | 6 | 0 | 2 | 64 | 6.0000 | -.30000 | .0750 | .002679 |
| 6 | 5 | 0 | 6 | 3 | 0 | 1 | 6 | 3 | 2 | 76 | 6.2500 | -.31250 | .0781 | .002790 |
| 6 | 10 | 0 | 6 | 6 | 0 | 1 | 7 | 2 | 2 | 88 | 6.5000 | -.32500 | .0813 | .002902 |
| 6 | 15 | 0 | 6 | 9 | 0 | 1 | 8 | 1 | 2 | 100 | 6.7500 | -.33750 | .0844 | .003013 |
| 7 | 0 | 0 | 7 | 0 | 0 | 1 | 9 | 0 | 3 | 0 | 7.0000 | -.35000 | .0875 | .003125 |
| 7 | 5 | 0 | 7 | 3 | 0 | 1 | 9 | 3 | 3 | 12 | 7.2500 | -.36250 | .0906 | .003237 |
| 7 | 10 | 0 | 7 | 6 | 0 | 1 | 10 | 2 | 3 | 24 | 7.5000 | -.37500 | .0938 | .003348 |
| 7 | 15 | 0 | 7 | 9 | 0 | 1 | 11 | 1 | 3 | 36 | 7.7500 | -.38750 | .0969 | .003460 |
| 8 | 0 | 0 | 8 | 0 | 0 | 2 | 0 | 0 | 3 | 48 | 8.0000 | -.40000 | .1000 | .003571 |
| 8 | 5 | 0 | 8 | 3 | 0 | 2 | 0 | 3 | 3 | 60 | 8.2500 | -.41250 | .1031 | .003683 |
| 8 | 10 | 0 | 8 | 6 | 0 | 2 | 1 | 2 | 3 | 72 | 8.5000 | -.42500 | .1063 | .003795 |
| 8 | 15 | 0 | 8 | 9 | 0 | 2 | 2 | 1 | 3 | 3-4 | 8.7500 | -.43750 | .1094 | .003906 |

## TABLE II.—Showing Merchandize per Ton, Cwt., Qr. and Lb., in Sterling and Equivalents in Decimals of the £.

| Ton. | | | Cwt. | | | Qr. | | | Lb. | | 1 to 10 Tons. | 1 to 100 Cwts. | 1 to 10 Qrs. | 1 to 1000 Lbs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| £ | S. | D. | S. | D. | F. | S. | D. | F. | F. | 112. | £ | £ | £ | £ |
| 9 | 0 | 0 | 9 | 0 | 0 | 2 | 3 | 0 | 3 | 96 | 9.0000 | 0.45000 | .1125 | .004018 |
| 9 | 5 | 0 | 9 | 3 | 0 | 2 | 3 | 3 | 3 | 108 | 9.2500 | 0.46250 | .1156 | .004129 |
| 9 | 10 | 0 | 9 | 6 | 0 | 2 | 4 | 2 | 4 | 8 | 9.5000 | 0.47500 | .1188 | .004241 |
| 9 | 15 | 0 | 9 | 9 | 0 | 2 | 5 | 1 | 4 | 20 | 9.7500 | 0.48750 | .1219 | .004353 |
| 10 | 0 | 0 | 10 | 0 | 0 | 2 | 6 | 0 | 4 | 32 | 10.0000 | 0.50000 | .1250 | .004464 |
| 10 | 5 | 0 | 10 | 3 | 0 | 2 | 6 | 3 | 4 | 44 | 10.2500 | 0.51250 | .1281 | .004576 |
| 10 | 10 | 0 | 10 | 6 | 0 | 2 | 7 | 2 | 4 | 1-2 | 10.5000 | 0.52500 | .1313 | .004688 |
| 10 | 15 | 0 | 10 | 9 | 0 | 2 | 8 | 1 | 4 | 68 | 10.7500 | 0.53750 | .1344 | .004799 |
| 11 | 0 | 0 | 11 | 0 | 0 | 2 | 9 | 0 | 4 | 80 | 11.0000 | 0.55000 | .1375 | .004911 |
| 11 | 5 | 0 | 11 | 3 | 0 | 2 | 9 | 3 | 4 | 92 | 11.2500 | 0.56250 | .1406 | .005022 |
| 11 | 10 | 0 | 11 | 6 | 0 | 2 | 10 | 2 | 4 | 104 | 11.5000 | 0.57500 | .1438 | .005134 |
| 11 | 15 | 0 | 11 | 9 | 0 | 2 | 11 | 1 | 5 | 4 | 11.7500 | 0.58750 | .1469 | .005246 |
| 12 | 0 | 0 | 12 | 0 | 0 | 3 | 0 | 0 | 5 | 16 | 12.0000 | 0.60000 | .1500 | .005357 |
| 12 | 5 | 0 | 12 | 3 | 0 | 3 | 0 | 3 | 5 | 1-4 | 12.2500 | 0.61250 | .1531 | .005469 |
| 12 | 10 | 0 | 12 | 6 | 0 | 3 | 1 | 2 | 5 | 40 | 12.5000 | 0.62500 | .1563 | .005580 |
| 12 | 15 | 0 | 12 | 9 | 0 | 3 | 2 | 1 | 5 | 52 | 12.7500 | 0.63750 | .1594 | .005692 |
| 13 | 0 | 0 | 13 | 0 | 0 | 3 | 3 | 0 | 5 | 64 | 13.0000 | 0.65000 | .1625 | .005804 |
| 13 | 5 | 0 | 13 | 3 | 0 | 3 | 3 | 3 | 5 | 76 | 13.2500 | 0.66250 | .1656 | .005915 |
| 13 | 10 | 0 | 13 | 6 | 0 | 3 | 4 | 2 | 5 | 88 | 13.5000 | 0.67500 | .1688 | .006027 |
| 13 | 15 | 0 | 13 | 9 | 0 | 3 | 5 | 1 | 5 | 100 | 13.7500 | 0.68750 | .1719 | .006138 |
| 14 | 0 | 0 | 14 | 0 | 0 | 3 | 6 | 0 | 6 | - | 14.0000 | 0.70000 | .1750 | .006250 |
| 14 | 5 | 0 | 14 | 3 | 0 | 3 | 6 | 3 | 6 | 12 | 14.2500 | 0.71250 | .1781 | .006362 |
| 14 | 10 | 0 | 14 | 6 | 0 | 3 | 7 | 2 | 6 | 24 | 14.5000 | 0.72500 | .1813 | .006473 |
| 14 | 15 | 0 | 14 | 9 | 0 | 3 | 8 | 1 | 6 | 36 | 14.7500 | 0.73750 | .1844 | .006585 |
| 15 | 0 | 0 | 15 | 0 | 0 | 3 | 9 | 0 | 6 | 48 | 15.0000 | 0.75000 | .1875 | .006696 |
| 15 | 5 | 0 | 15 | 3 | 0 | 3 | 9 | 3 | 6 | 60 | 15.2500 | 0.76250 | .1906 | .006808 |
| 15 | 10 | 0 | 15 | 6 | 0 | 3 | 10 | 2 | 6 | 72 | 15.5000 | 0.77500 | .1938 | .006920 |
| 15 | 15 | 0 | 15 | 9 | 0 | 3 | 11 | 1 | 6 | 3-4 | 15.7500 | 0.78750 | .1969 | .007031 |
| 16 | 0 | 0 | 16 | 0 | 0 | 4 | 0 | 0 | 6 | 96 | 16.0000 | 0.80000 | .2000 | .007143 |
| 16 | 5 | 0 | 16 | 3 | 0 | 4 | 0 | 3 | 6 | 108 | 16.2500 | 0.81250 | .2031 | .007254 |
| 16 | 10 | 0 | 16 | 6 | 0 | 4 | 1 | 2 | 7 | 8 | 16.5000 | 0.82500 | .2063 | .007366 |
| 16 | 15 | 0 | 16 | 9 | 0 | 4 | 2 | 1 | 7 | 20 | 16.7500 | 0.83750 | .2094 | .007478 |
| 17 | 0 | 0 | 17 | 0 | 0 | 4 | 3 | 0 | 7 | 32 | 17.0000 | 0.85000 | .2125 | .007589 |
| 17 | 5 | 0 | 17 | 3 | 0 | 4 | 3 | 3 | 7 | 44 | 17.2500 | 0.86250 | .2156 | .007701 |
| 17 | 10 | 0 | 17 | 6 | 0 | 4 | 4 | 2 | 7 | 1-2 | 17.5000 | 0.87500 | .2188 | .007813 |
| 17 | 15 | 0 | 17 | 9 | 0 | 4 | 5 | 1 | 7 | 68 | 17.7500 | 0.88750 | .2219 | .007924 |
| 18 | 0 | 0 | 18 | 0 | 0 | 4 | 6 | 0 | 7 | 80 | 18.0000 | 0.90000 | .2250 | .008036 |
| 18 | 5 | 0 | 18 | 3 | 0 | 4 | 6 | 3 | 7 | 92 | 18.2500 | 0.91250 | .2281 | .008147 |
| 18 | 10 | 0 | 18 | 6 | 0 | 4 | 7 | 2 | 7 | 104 | 18.5000 | 0.92500 | .2313 | .008259 |
| 18 | 15 | 0 | 18 | 9 | 0 | 4 | 8 | 1 | 8 | 4 | 18.7500 | 0.93750 | .2344 | .008371 |
| 19 | 0 | 0 | 19 | 0 | 0 | 4 | 9 | 0 | 8 | 16 | 19.0000 | 0.95000 | .2375 | .008482 |
| 19 | 5 | 0 | 19 | 3 | 0 | 4 | 9 | 3 | 8 | 1-4 | 19.2500 | 0.96250 | .2406 | .008594 |
| 19 | 10 | 0 | 19 | 6 | 0 | 4 | 10 | 2 | 8 | 40 | 19.5000 | 0.97500 | .2438 | .008705 |
| 19 | 15 | 0 | 19 | 9 | 0 | 4 | 11 | 1 | 8 | 52 | 19.7500 | 0.98750 | .2469 | .008817 |
| 20 | 0 | 0 | 20 | 0 | 0 | 5 | 0 | 0 | 8 | 64 | 20.0000 | 1.00000 | .2500 | .008929 |
| 20 | 10 | 0 | 20 | 6 | 0 | 5 | 1 | 2 | 8 | 88 | 20.5000 | 1.02500 | .2563 | .009152 |
| 21 | 0 | 0 | 21 | 0 | 0 | 5 | 3 | 0 | 9 | - | 21.0000 | 1.05000 | .2625 | .009375 |
| 21 | 10 | 0 | 21 | 6 | 0 | 5 | 4 | 2 | 9 | 24 | 21.5000 | 1.07500 | .2688 | .009598 |
| 22 | 0 | 0 | 22 | 0 | 0 | 5 | 6 | 0 | 9 | 48 | 22.0000 | 1.10000 | .2750 | .009821 |
| 22 | 10 | 0 | 22 | 6 | 0 | 5 | 7 | 2 | 9 | 72 | 22.5000 | 1.12500 | .2813 | .010045 |
| 23 | 0 | 0 | 23 | 0 | 0 | 5 | 9 | 0 | 9 | 96 | 23.0000 | 1.15000 | .2875 | .010268 |
| 23 | 10 | 0 | 23 | 6 | 0 | 5 | 10 | 2 | 10 | 8 | 23.5000 | 1.17500 | .2938 | .010491 |
| 24 | 0 | 0 | 24 | 0 | 0 | 6 | 0 | 0 | 10 | 32 | 24.0000 | 1.20000 | .3000 | .010714 |
| 24 | 10 | 0 | 24 | 6 | 0 | 6 | 1 | 2 | 10 | 1-2 | 24.5000 | 1.22500 | .3063 | .010938 |
| 25 | 0 | 0 | 25 | 0 | 0 | 6 | 3 | 0 | 10 | 80 | 25.0000 | 1.25000 | .3125 | .011161 |
| 25 | 10 | 0 | 25 | 6 | 0 | 6 | 4 | 2 | 10 | 104 | 25.5000 | 1.27500 | .3188 | .011384 |
| 26 | 0 | 0 | 26 | 0 | 0 | 6 | 6 | 0 | 11 | 16 | 26.0000 | 1.30000 | .3250 | .011607 |
| 26 | 10 | 0 | 26 | 6 | 0 | 6 | 7 | 2 | 11 | 40 | 26.5000 | 1.32500 | .3313 | .011830 |
| 27 | 0 | 0 | 27 | 0 | 0 | 6 | 9 | 0 | 11 | 64 | 27.0000 | 1.35000 | .3375 | .012054 |
| 27 | 10 | 0 | 27 | 6 | 0 | 6 | 10 | 2 | 11 | 88 | 27.5000 | 1.37500 | .3438 | .012277 |
| 28 | 0 | 0 | 28 | 0 | 0 | 7 | 0 | 0 | 12 | - | 28.0000 | 1.40000 | .3500 | .012500 |
| 28 | 10 | 0 | 28 | 6 | 0 | 7 | 1 | 2 | 12 | 24 | 28.5000 | 1.42500 | .3563 | .012723 |
| 29 | 0 | 0 | 29 | 0 | 0 | 7 | 3 | 0 | 12 | 48 | 29.0000 | 1.45000 | .3625 | .012946 |

## TABLE II.—Showing Merchandize per Ton, Cwt., Qr. and Lb., in Sterling and Equivalents in Decimals of the £.

| Ton. | | | Cwt. | | | Qr. | | | Lb. | | 1 to 10 Tons. | 1 to 100 Cwts. | 1 to 10 Qrs. | 1 to 1000 Lbs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| £ | S. | D. | S. | D. | F. | S. | D. | F. | F. | 112. | £ | £ | £ | £ |
| 29 | 10 | 0 | 29 | 6 | 0 | 7 | 4 | 2 | 12 | 72 | 29.5000 | 1.47500 | .3688 | .013170 |
| 30 | 0 | 0 | 30 | 0 | 0 | 7 | 6 | 0 | 12 | 96 | 30.0000 | 1.50000 | .3750 | .013393 |
| 30 | 10 | 0 | 30 | 6 | 0 | 7 | 7 | 2 | 13 | 8 | 30.5000 | 1.52500 | .3813 | .013616 |
| 31 | 0 | 0 | 31 | 0 | 0 | 7 | 9 | 0 | 13 | 32 | 31.0000 | 1.55000 | .3875 | .013839 |
| 31 | 10 | 0 | 31 | 6 | 0 | 7 | 10 | 2 | 13 | 1-2 | 31.5000 | 1.57500 | .3958 | .014063 |
| 32 | 0 | 0 | 32 | 0 | 0 | 8 | 0 | 0 | 13 | 80 | 32.0000 | 1.60000 | .4000 | .014286 |
| 32 | 10 | 0 | 32 | 6 | 0 | 8 | 1 | 2 | 13 | 104 | 32.5000 | 1.62500 | .4063 | .014509 |
| 33 | 0 | 0 | 33 | 0 | 0 | 8 | 3 | 0 | 14 | 16 | 33.0000 | 1.65000 | .4125 | .014732 |
| 33 | 10 | 0 | 33 | 6 | 0 | 8 | 4 | 2 | 14 | 40 | 33.5000 | 1.67500 | .4188 | .014955 |
| 34 | 0 | 0 | 34 | 0 | 0 | 8 | 6 | 0 | 14 | 64 | 34.0000 | 1.70000 | .4250 | .015179 |
| 34 | 10 | 0 | 34 | 6 | 0 | 8 | 7 | 2 | 14 | 88 | 34.5000 | 1.72500 | .4313 | .015402 |
| 35 | 0 | 0 | 35 | 0 | 0 | 8 | 9 | 0 | 15 | - | 35.0000 | 1.75000 | .4375 | .015625 |
| 35 | 10 | 0 | 35 | 6 | 0 | 8 | 10 | 2 | 15 | 24 | 35.5000 | 1.77500 | .4438 | .015848 |
| 36 | 0 | 0 | 36 | 0 | 0 | 9 | 0 | 0 | 15 | 48 | 36.0000 | 1.80000 | .4500 | .016071 |
| 36 | 10 | 0 | 36 | 6 | 0 | 9 | 1 | 2 | 15 | 72 | 36.5000 | 1.82500 | .4563 | .016295 |
| 37 | 0 | 0 | 37 | 0 | 0 | 9 | 3 | 0 | 15 | 96 | 37.0000 | 1.85000 | .4625 | .016518 |
| 37 | 10 | 0 | 37 | 6 | 0 | 9 | 4 | 2 | 16 | 8 | 37.5000 | 1.87500 | .4688 | .016741 |
| 38 | 0 | 0 | 38 | 0 | 0 | 9 | 6 | 0 | 16 | 32 | 38.0000 | 1.90000 | .4750 | .016964 |
| 38 | 10 | 0 | 38 | 6 | 0 | 9 | 7 | 2 | 16 | 1-2 | 38.5000 | 1.92500 | .4813 | .017188 |
| 39 | 0 | 0 | 39 | 0 | 0 | 9 | 9 | 0 | 16 | 80 | 39.0000 | 1.95000 | .4875 | .017411 |
| 39 | 10 | 0 | 39 | 6 | 0 | 9 | 10 | 2 | 16 | 104 | 39.5000 | 1.97500 | .4938 | .017634 |
| 40 | 0 | 0 | 40 | 0 | 0 | 10 | 0 | 0 | 17 | 16 | 40.0000 | 2.00000 | .5000 | .017857 |
| 40 | 10 | 0 | 40 | 6 | 0 | 10 | 1 | 2 | 17 | 40 | 40.5000 | 2.02500 | .5063 | .018080 |
| 41 | 0 | 0 | 41 | 0 | 0 | 10 | 3 | 0 | 17 | 64 | 41.0000 | 2.05000 | .5125 | .018304 |
| 41 | 10 | 0 | 41 | 6 | 0 | 10 | 4 | 2 | 17 | 88 | 41.5000 | 2.07500 | .5188 | .018527 |
| 42 | 0 | 0 | 42 | 0 | 0 | 10 | 6 | 0 | 18 | - | 42.0000 | 2.10000 | .5250 | .018750 |
| 42 | 10 | 0 | 42 | 6 | 0 | 10 | 7 | 2 | 18 | 24 | 42.5000 | 2.12500 | .5313 | .018973 |
| 43 | 0 | 0 | 43 | 0 | 0 | 10 | 9 | 0 | 18 | 48 | 43.0000 | 2.15000 | .5375 | .019196 |
| 43 | 10 | 0 | 43 | 6 | 0 | 10 | 10 | 2 | 18 | 72 | 43.5000 | 2.17500 | .5438 | .019420 |
| 44 | 0 | 0 | 44 | 0 | 0 | 11 | 0 | 0 | 18 | 96 | 44.0000 | 2.20000 | .5500 | .019643 |
| 44 | 10 | 0 | 44 | 6 | 0 | 11 | 1 | 2 | 19 | 8 | 44.5000 | 2.22500 | .5563 | .019866 |
| 45 | 0 | 0 | 45 | 0 | 0 | 11 | 3 | 0 | 19 | 32 | 45.0000 | 2.25000 | .5625 | .020089 |
| 45 | 10 | 0 | 45 | 6 | 0 | 11 | 4 | 2 | 19 | 1-2 | 45.5000 | 2.27500 | .5688 | .020313 |
| 46 | 0 | 0 | 46 | 0 | 0 | 11 | 6 | 0 | 19 | 80 | 46.0000 | 2.30000 | .5750 | .020536 |
| 46 | 10 | 0 | 46 | 6 | 0 | 11 | 7 | 2 | 19 | 104 | 46.5000 | 2.32500 | .5813 | .020759 |
| 47 | 0 | 0 | 47 | 0 | 0 | 11 | 9 | 0 | 20 | 16 | 47.0000 | 2.35000 | .5875 | .020982 |
| 47 | 10 | 0 | 47 | 6 | 0 | 11 | 10 | 2 | 20 | 40 | 47.5000 | 2.37500 | .5938 | .021205 |
| 48 | 0 | 0 | 48 | 0 | 0 | 12 | 0 | 0 | 20 | 64 | 48.0000 | 2.40000 | .6000 | .021429 |
| 48 | 10 | 0 | 48 | 6 | 0 | 12 | 1 | 2 | 20 | 88 | 48.5000 | 2.42500 | .6063 | .021652 |
| 49 | 0 | 0 | 49 | 0 | 0 | 12 | 3 | 0 | 21 | - | 49.0000 | 2.45000 | .6125 | .021875 |
| 49 | 10 | 0 | 49 | 6 | 0 | 12 | 4 | 2 | 21 | 24 | 49.5000 | 2.47500 | .6188 | .022098 |
| 50 | 0 | 0 | 50 | 0 | 0 | 12 | 6 | 0 | 21 | 48 | 50.0000 | 2.50000 | .6250 | .022321 |
| 51 | 0 | 0 | 51 | 0 | 0 | 12 | 9 | 0 | 21 | 96 | 51.0000 | 2.55000 | .6375 | .022768 |
| 52 | 0 | 0 | 52 | 0 | 0 | 13 | 0 | 0 | 22 | 32 | 52.0000 | 2.60000 | .6500 | .023214 |
| 53 | 0 | 0 | 53 | 0 | 0 | 13 | 3 | 0 | 22 | 80 | 53.0000 | 2.65000 | .6625 | .023661 |
| 54 | 0 | 0 | 54 | 0 | 0 | 13 | 6 | 0 | 23 | 16 | 54.0000 | 2.70000 | .6750 | .024107 |
| 55 | 0 | 0 | 55 | 0 | 0 | 13 | 9 | 0 | 23 | 64 | 55.0000 | 2.75000 | .6875 | .024554 |
| 56 | 0 | 0 | 56 | 0 | 0 | 14 | 0 | 0 | 24 | - | 56.0000 | 2.80000 | .7000 | .025000 |
| 57 | 0 | 0 | 57 | 0 | 0 | 14 | 3 | 0 | 24 | 48 | 57.0000 | 2.85000 | .7125 | .025446 |
| 58 | 0 | 0 | 58 | 0 | 0 | 14 | 6 | 0 | 24 | 96 | 58.0000 | 2.90000 | .7250 | .025893 |
| 59 | 0 | 0 | 59 | 0 | 0 | 14 | 9 | 0 | 25 | 32 | 59.0000 | 2.95000 | .7375 | .026339 |
| 60 | 0 | 0 | 60 | 0 | 0 | 15 | 0 | 0 | 25 | 80 | 60.0000 | 3.00000 | .7500 | .026786 |
| 61 | 0 | 0 | 61 | 0 | 0 | 15 | 3 | 0 | 26 | 16 | 61.0000 | 3.05000 | .7625 | .027232 |
| 62 | 0 | 0 | 62 | 0 | 0 | 15 | 6 | 0 | 26 | 64 | 62.0000 | 3.10000 | .7750 | .027679 |
| 63 | 0 | 0 | 63 | 0 | 0 | 15 | 9 | 0 | 27 | - | 63.0000 | 3.15000 | .7875 | .028125 |
| 64 | 0 | 0 | 64 | 0 | 0 | 16 | 0 | 0 | 27 | 48 | 64.0000 | 3.20000 | .8000 | .028571 |
| 65 | 0 | 0 | 65 | 0 | 0 | 16 | 3 | 0 | 27 | 96 | 65.0000 | 3.25000 | .8125 | .029018 |
| 66 | 0 | 0 | 66 | 0 | 0 | 16 | 6 | 0 | 28 | 32 | 66.0000 | 3.30000 | .8250 | .029464 |
| 67 | 0 | 0 | 67 | 0 | 0 | 16 | 9 | 0 | 28 | 80 | 67.0000 | 3.35000 | .8375 | .029911 |
| 68 | 0 | 0 | 68 | 0 | 0 | 17 | 0 | 0 | 29 | 16 | 68.0000 | 3.40000 | .8500 | .030357 |
| 69 | 0 | 0 | 69 | 0 | 0 | 17 | 3 | 0 | 29 | 64 | 69.0000 | 3.45000 | .8625 | .030804 |
| 70 | 0 | 0 | 70 | 0 | 0 | 17 | 6 | 0 | 30 | - | 70.0000 | 3.50000 | .8750 | .031250 |
| 71 | 0 | 0 | 71 | 0 | 0 | 17 | 9 | 0 | 30 | 48 | 71.0000 | 3.55000 | .8875 | .031696 |

## TABLE II.—Showing Merchandize per Ton, Cwt., Qr., and Lb., in Sterling and Equivalents in Decimals of the £.,

| Ton. | | | Cwt. | | | Qr. | | | Lb. | | 1 to 10 Tons. | 1 to 100 Cwts. | 1 to 10 Qrs. | 1 to 1000 Lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| £ | S. | D. | S. | D. | F. | S. | D. | F. | F. | 112. | £ | £ | £ | £ |
| 72 | 0 | 0 | 72 | 0 | 0 | 18 | 0 | 0 | 30 | 96 | 72.0000 | 3·60000 | .9000 | .032143 |
| 73 | 0 | 0 | 73 | 0 | 0 | 18 | 3 | 0 | 31 | 32 | 73.0000 | 3·65000 | .9125 | ·032589 |
| 74 | 0 | 0 | 74 | 0 | 0 | 18 | 6 | 0 | 31 | 80 | 74.0000 | 3·70000 | .9250 | ·033030 |
| 75 | 0 | 0 | 75 | 0 | 0 | 18 | 9 | 0 | 32 | 16 | 75.0000 | 3·75000 | ·9375 | ·033482 |
| 76 | 0 | 0 | 76 | 0 | 0 | 19 | 0 | 0 | 32 | 64 | 76.0000 | 3·80000 | .9500 | ·033929 |
| 77 | 0 | 0 | 77 | 0 | 0 | 19 | 3 | 0 | 33 | - | 77.0000 | 3·85000 | .9025 | ·034375 |
| 78 | 0 | 0 | 78 | 0 | 0 | 19 | 6 | 0 | 33 | 48 | 78.0000 | 3·90000 | .9750 | ·034821 |
| 79 | 0 | 0 | 79 | 0 | 0 | 19 | 9 | 0 | 33 | 96 | 79.0000 | 3·95000 | .9875 | ·035268 |
| 80 | 0 | 0 | 80 | 0 | 0 | 20 | 0 | 0 | 34 | 32 | 80.0000 | 4·00000 | 1.0000 | ·035714 |
| 81 | 0 | 0 | 81 | 0 | 0 | 20 | 3 | 0 | 34 | 80 | 81.0000 | 4·05000 | 1.0125 | ·036161 |
| 82 | 0 | 0 | 82 | 0 | 0 | 20 | 6 | 0 | 35 | 16 | 82.0000 | 4·10000 | 1.0250 | ·036607 |
| 83 | 0 | 0 | 83 | 0 | 0 | 20 | 9 | 0 | 35 | 64 | 83.0000 | 4·15000 | 1.0375 | ·037054 |
| 84 | 0 | 0 | 84 | 0 | 0 | 21 | 0 | 0 | 36 | - | 84.0000 | 4·20000 | 1.0500 | ·037500 |
| 85 | 0 | 0 | 85 | 0 | 0 | 21 | 3 | 0 | 36 | 48 | 85.0000 | 4·25000 | 1.0025 | ·037946 |
| 86 | 0 | 0 | 86 | 0 | 0 | 21 | 6 | 0 | 36 | 96 | 86.0000 | 4·30000 | 1.0750 | ·038393 |
| 87 | 0 | 0 | 87 | 0 | 0 | 21 | 9 | 0 | 37 | 32 | 87.0000 | 4·35000 | 1.0875 | ·038839 |
| 88 | 0 | 0 | 88 | 0 | 0 | 22 | 0 | 0 | 37 | 80 | 88.0000 | 4·40000 | 1.1000 | ·039280 |
| 89 | 0 | 0 | 89 | 0 | 0 | 22 | 3 | 0 | 38 | 16 | 89.0000 | 4·45000 | 1.1125 | ·039732 |
| 90 | 0 | 0 | 90 | 0 | 0 | 22 | 6 | 0 | 38 | 64 | 90.0000 | 4·50000 | 1.1250 | ·040179 |
| 91 | 0 | 0 | 91 | 0 | 0 | 22 | 9 | 0 | 39 | - | 91.0000 | 4·55000 | 1.1375 | ·040625 |
| 92 | 0 | 0 | 92 | 0 | 0 | 23 | 0 | 0 | 39 | 48 | 92.0000 | 4·00000 | 1.1500 | ·041071 |
| 93 | 0 | 0 | 93 | 0 | 0 | 23 | 3 | 0 | 39 | 96 | 93.0000 | 4·65000 | 1.1625 | ·041518 |
| 94 | 0 | 0 | 94 | 0 | 0 | 23 | 6 | 0 | 40 | 32 | 94.0000 | 4·70000 | 1.1750 | ·041964 |
| 95 | 0 | 0 | 95 | 0 | 0 | 23 | 9 | 0 | 40 | 80 | 95.0000 | 4·75000 | 1.1875 | ·042411 |
| 96 | 0 | 0 | 96 | 0 | 0 | 24 | 0 | 0 | 41 | 16 | 96.0000 | 4·80000 | 1.2000 | ·042857 |
| 97 | 0 | 0 | 97 | 0 | 0 | 24 | 3 | 0 | 41 | 64 | 97.0000 | 4·85000 | 1.2125 | ·043304 |
| 98 | 0 | 0 | 98 | 0 | 0 | 24 | 6 | 0 | 42 | - | 98.0000 | 4·90000 | 1.2250 | ·043750 |
| 99 | 0 | 0 | 99 | 0 | 0 | 24 | 9 | 0 | 42 | 48 | 99.0000 | 4·95000 | 1.2375 | ·044196 |
| 100 | 0 | 0 | 100 | 0 | 0 | 25 | 0 | 0 | 42 | 96 | 100.0000 | 5·00000 | 1.2500 | ·044643 |
| 101 | 0 | 0 | 101 | 0 | 0 | 25 | 3 | 0 | 43 | 32 | 101.0000 | 5·05000 | 1.2625 | ·045089 |
| 102 | 0 | 0 | 102 | 0 | 0 | 25 | 6 | 0 | 43 | 80 | 102.0000 | 5·10000 | 1.2750 | ·045536 |
| 103 | 0 | 0 | 103 | 0 | 0 | 25 | 9 | 0 | 44 | 16 | 103.0000 | 5·15000 | 1.2875 | ·045982 |
| 104 | 0 | 0 | 104 | 0 | 0 | 26 | 0 | 0 | 44 | 64 | 104.0000 | 5·20000 | 1.3000 | ·046429 |
| 105 | 0 | 0 | 105 | 0 | 0 | 26 | 3 | 0 | 45 | - | 105.0000 | 5·25000 | 1.3125 | ·046875 |
| 106 | 0 | 0 | 106 | 0 | 0 | 26 | 6 | 0 | 45 | 48 | 106.0000 | 5·30000 | 1.3250 | ·047321 |
| 107 | 0 | 0 | 107 | 0 | 0 | 26 | 9 | 0 | 45 | 96 | 107.0000 | 5·35000 | 1.3375 | ·047768 |
| 108 | 0 | 0 | 108 | 0 | 0 | 27 | 0 | 0 | 46 | 32 | 108.0000 | 5·40000 | 1.3500 | ·048214 |
| 109 | 0 | 0 | 109 | 0 | 0 | 27 | 3 | 0 | 46 | 80 | 109.0000 | 5·45000 | 1.3625 | ·048661 |
| 110 | 0 | 0 | 110 | 0 | 0 | 27 | 6 | 0 | 47 | 16 | 110.0000 | 5·50000 | 1.3750 | ·049107 |
| 111 | 0 | 0 | 111 | 0 | 0 | 27 | 9 | 0 | 47 | 64 | 111.0000 | 5·55000 | 1.3875 | ·049554 |
| 112 | 0 | 0 | 112 | 0 | 0 | 28 | 0 | 0 | 48 | - | 112.0000 | 5·60000 | 1.4000 | ·050000 |
| 113 | 0 | 0 | 113 | 0 | 0 | 28 | 3 | 0 | 48 | 48 | 113.0000 | 5·65000 | 1.4125 | ·050446 |
| 114 | 0 | 0 | 114 | 0 | 0 | 28 | 6 | 0 | 48 | 95 | 114.0000 | 5·70000 | 1.4250 | ·050893 |
| 115 | 0 | 0 | 115 | 0 | 0 | 28 | 9 | 0 | 49 | 32 | 115.0000 | 5·75000 | 1.4375 | ·051339 |
| 116 | 0 | 0 | 116 | 0 | 0 | 29 | 0 | 0 | 49 | 80 | 116.0000 | 5·80000 | 1.4500 | ·051786 |
| 117 | 0 | 0 | 117 | 0 | 0 | 29 | 3 | 0 | 50 | 16 | 117.0000 | 5·85000 | 1.4025 | ·052232 |
| 118 | 0 | 0 | 118 | 0 | 0 | 29 | 6 | 0 | 50 | 64 | 118.0000 | 5·90000 | 1·4750 | ·052679 |
| 119 | 0 | 0 | 119 | 0 | 0 | 29 | 9 | 0 | 51 | - | 119.0000 | 5·95000 | 1·4875 | ·053125 |
| 120 | 0 | 0 | 120 | 0 | 0 | 30 | 0 | 0 | 51 | 48 | 120.0000 | 6·00000 | 1·5000 | ·053571 |
| 121 | 0 | 0 | 121 | 0 | 0 | 30 | 3 | 0 | 51 | 96 | 121.0000 | 6·05000 | 1·5125 | ·054018 |
| 122 | 0 | 0 | 122 | 0 | 0 | 30 | 6 | 0 | 52 | 32 | 122.0000 | 6·10000 | 1·5250 | ·054464 |
| 123 | 0 | 0 | 123 | 0 | 0 | 30 | 9 | 0 | 52 | 80 | 123.0000 | 6·15000 | 1·5375 | ·054911 |
| 124 | 0 | 0 | 124 | 0 | 0 | 31 | 0 | 0 | 53 | 16 | 124.0000 | 6·20000 | 1·5500 | ·055357 |
| 125 | 0 | 0 | 125 | 0 | 0 | 31 | 3 | 0 | 53 | 64 | 125.0000 | 6·25000 | 1·5625 | ·055804 |
| 126 | 0 | 0 | 126 | 0 | 0 | 31 | 6 | 0 | 54 | - | 126.0000 | 6·30000 | 1·5750 | ·056250 |
| 127 | 0 | 0 | 127 | 0 | 0 | 31 | 9 | 0 | 54 | 48 | 127.0000 | 6·35000 | 1·5875 | ·056596 |
| 128 | 0 | 0 | 128 | 0 | 0 | 32 | 0 | 0 | 54 | 96 | 128 0000 | 6·40000 | 1·6000 | ·057143 |
| 129 | 0 | 0 | 129 | 0 | 0 | 32 | 3 | 0 | 55 | 32 | 129.0000 | 6·45000 | 1·6125 | ·057589 |
| 130 | 0 | 0 | 130 | 0 | 0 | 32 | 6 | 0 | 55 | 80 | 130.0000 | 6·50000 | 1·6250 | ·058036 |
| 131 | 0 | 0 | 131 | 0 | 0 | 32 | 9 | 0 | 56 | 16 | 131.0000 | 6·55000 | 1·6375 | ·058482 |
| 132 | 0 | 0 | 132 | 0 | 0 | 33 | 0 | 0 | 56 | 64 | 132.0000 | 6·60000 | 1·6500 | ·058929 |
| 133 | 0 | 0 | 133 | 0 | 0 | 33 | 3 | 0 | 57 | - | 133·0000 | 6.65000 | 1·6625 | ·059375 |
| 134 | 0 | 0 | 134 | 0 | 0 | 33 | 6 | 0 | 57 | 48 | 134·0000 | 6.70000 | 1.6750 | ·059822 |

# TABLE III.—Showing Merchandize per lb. in Tenpennies, and Equivalents per lb., Cwt., and Ton, in Sterling.

| Tenpennies. | | Sterling. | | | | | | | Tenpennies. | | Sterling. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| lb. | 1 to 10,000 lbs. | lb. | Cwt. | | | Ton. | | | lb. | 1 to 10,000 lbs. | lb. | Cwt. | | | Ton. | | |
| Cents. | Tenp. | F. 112. | S. | D. | F. | £. | S. | D. | Cents. | Tenp. | F. 112. | S | D. | F. | £. | S. | D. |
| - -1/16 | -.000625 | - 2.8 | - | - | 2.8 | - | 1 | 2 | - 7 | -.070000 | 2 89.6 | 6 | 6 | 1.6 | 6 | 10 | 8 |
| - -1/8 | -.001250 | - 5.6 | - | 1 | 1.6 | - | 2 | 4 | - 7 1/4 | -.072500 | 2 100.8 | 6 | 9 | 0.8 | 6 | 15 | 4 |
| - -3/16 | -.001875 | - 8.4 | - | 2 | 0.4 | - | 3 | 6 | - 7 1/2 | -.075000 | 3 - - | 7 | - | - | 7 | - | - |
| - -1/4 | -.002500 | - 11.2 | - | 2 | 3.2 | - | 4 | 8 | - 7 3/4 | -.077500 | 3 11.2 | 7 | 2 | 3.2 | 7 | 4 | 8 |
| - -5/16 | -.003125 | - 1-8 | - | 3 | 2.- | - | 5 | 10 | - 8 | -.080000 | 3 22.4 | 7 | 5 | 2.4 | 7 | 9 | 4 |
| - -3/8 | -.003750 | - 16.8 | - | 4 | 0.8 | - | 7 | 0 | - 8 1/4 | -.082500 | 3 33.6 | 7 | 8 | 1.6 | 7 | 14 | 0 |
| - -7/16 | -.004375 | - 19.6 | - | 4 | 3.6 | - | 8 | 2 | - 8 1/2 | -.085000 | 3 44.8 | 7 | 11 | 0.8 | 7 | 18 | 8 |
| - -1/2 | -.005000 | - 22.4 | - | 5 | 2.4 | - | 9 | 4 | - 8 3/4 | -.087500 | 3 1-2 | 8 | 2 | - | 8 | 3 | 4 |
| - -9/16 | -.005625 | - 25.2 | - | 6 | 1.2 | - | 10 | 6 | - 9 | -.090000 | 3 67.2 | 8 | 4 | 3.2 | 8 | 8 | 0 |
| - -5/8 | -.006250 | - 1-4 | - | 7 | -.- | - | 11 | 8 | - 9 1/4 | -.092500 | 3 78.4 | 8 | 7 | 2.4 | 8 | 12 | 8 |
| - -11/16 | -.006875 | - 30.8 | - | 7 | 2.8 | - | 12 | 10 | - 9 1/2 | -.095000 | 3 89.6 | 8 | 10 | 1.6 | 8 | 17 | 4 |
| - -3/4 | -.007500 | - 33.6 | - | 8 | 1.6 | - | 14 | 0 | - 9 3/4 | -.097500 | 3 100.8 | 9 | 1 | 0.8 | 9 | 2 | 0 |
| - -13/16 | -.008125 | - 36.4 | - | 9 | 0.4 | - | 15 | 0 | - 10 | -.100000 | 4 - | 9 | 4 | - | 9 | 6 | 8 |
| - -7/8 | -.008750 | - 39.2 | - | 9 | 3.2 | - | 16 | 4 | - 10 1/4 | -.102500 | 4 11.2 | 9 | 6 | 3.2 | 9 | 11 | 4 |
| - -15/16 | -.009375 | - 3-8 | - | 10 | 2.- | - | 17 | 6 | - 10 1/2 | -.105000 | 4 22 4 | 9 | 9 | 2.4 | 9 | 16 | 0 |
| - 1 | -.010000 | - 44.8 | - | 11 | 0.8 | - | 18 | 8 | - 10 3/4 | -.107500 | 4 33.6 | 10 | 0 | 1.6 | 10 | 0 | 8 |
| - 1 1/16 | -.010625 | - 47.6 | - | 11 | 3.6 | - | 19 | 10 | - 11 | -.110000 | 4 44.8 | 10 | 3 | 0.8 | 10 | 5 | 4 |
| - 1 1/8 | -.011250 | - 50.4 | 1 | 0 | 2.4 | 1 | 1 | 0 | - 11 1/4 | -.112500 | 4 1-2 | 10 | 6 | - | 10 | 10 | 0 |
| - 1 3/16 | -.011875 | - 53.2 | 1 | 1 | 1.2 | 1 | 2 | 2 | - 11 1/2 | -.115000 | 4 67.2 | 10 | 8 | 3.2 | 10 | 14 | 8 |
| - 1 1/4 | -.012500 | - 1-2 | 1 | 2 | -.- | 1 | 3 | 4 | - 11 3/4 | -.117500 | 4 78.4 | 10 | 11 | 2.4 | 10 | 19 | 4 |
| - 1 5/16 | -.013125 | - 58.8 | 1 | 2 | 2.8 | 1 | 4 | 6 | - 12 | -.120000 | 4 89.6 | 11 | 2 | 1.6 | 11 | 4 | 0 |
| - 1 3/8 | -.013750 | - 61.6 | 1 | 3 | 1.6 | 1 | 5 | 8 | - 12 1/4 | -.122500 | 4 100.8 | 11 | 5 | 0.8 | 11 | 8 | 8 |
| - 1 7/16 | -.014375 | - 64.4 | 1 | 4 | 0.4 | 1 | 6 | 10 | - 12 1/2 | -.125000 | 5 - | 11 | 8 | - | 11 | 13 | 4 |
| - 1 1/2 | -.015000 | - 67.2 | 1 | 4 | 3.2 | 1 | 8 | 0 | - 12 3/4 | -.127500 | 5 11.2 | 11 | 10 | 3.2 | 11 | 18 | 0 |
| - 1 9/16 | -.015625 | - 5-8 | 1 | 5 | 2.- | 1 | 9 | 2 | - 13 | -.130000 | 5 22.4 | 12 | 1 | 2.4 | 12 | 2 | 8 |
| - 1 5/8 | -.016250 | - 72.8 | 1 | 6 | 0.8 | 1 | 10 | 4 | - 13 1/4 | -.132500 | 5 33.6 | 12 | 4 | 1.6 | 12 | 7 | 4 |
| - 1 11/16 | -.016875 | - 75.6 | 1 | 6 | 3.6 | 1 | 11 | 6 | - 13 1/2 | -.135000 | 5 44.8 | 12 | 7 | 0.8 | 12 | 12 | 0 |
| - 1 3/4 | -.017500 | - 78.4 | 1 | 7 | 2.4 | 1 | 12 | 8 | - 13 3/4 | -.137500 | 5 1-2 | 12 | 10 | - | 12 | 16 | 8 |
| - 1 13/16 | -.018125 | - 81.2 | 1 | 8 | 1.2 | 1 | 13 | 10 | - 14 | -.140000 | 5 67.2 | 13 | 0 | 3.2 | 13 | 1 | 4 |
| - 1 7/8 | -.018750 | - 3-4 | 1 | 9 | - | 1 | 15 | 0 | - 14 1/4 | -.142500 | 5 78.4 | 13 | 3 | 2.4 | 13 | 6 | 0 |
| - 1 15/16 | -.019375 | - 86.8 | 1 | 9 | 2-8 | 1 | 16 | 2 | - 14 1/2 | -.145000 | 5 89.6 | 13 | 6 | 1.6 | 13 | 10 | 8 |
| - 2 | -.020000 | - 89.6 | 1 | 10 | 1.6 | 1 | 17 | 4 | - 14 3/4 | -.147500 | 5 100.8 | 13 | 9 | 0.8 | 13 | 15 | 4 |
| - 2 1/16 | -.020625 | - 92.4 | 1 | 11 | 0.4 | 1 | 18 | 6 | - 15 | -.150000 | 6 - | 14 | - | - | 14 | - | - |
| - 2 1/8 | -.021250 | - 95.2 | 1 | 11 | 3.2 | 1 | 19 | 8 | - 15 1/4 | -.152500 | 6 11.2 | 14 | 2 | 3.2 | 14 | 4 | 8 |
| - 2 3/16 | -.021875 | - 7-8 | 2 | 0 | 2 | 2 | 0 | 10 | - 15 1/2 | -.155000 | 6 22.4 | 14 | 5 | 2.4 | 14 | 9 | 4 |
| - 2 1/4 | -.022500 | - 100.8 | 2 | 1 | 0.8 | 2 | 2 | 0 | - 15 3/4 | -.157500 | 6 33.6 | 14 | 8 | 1.6 | 14 | 14 | 0 |
| - 2 5/16 | -.023125 | - 103.6 | 2 | 1 | 3.6 | 2 | 3 | 2 | - 16 | -.160000 | 6 44.8 | 14 | 11 | 0.8 | 14 | 18 | 8 |
| - 2 3/8 | -.023750 | - 106.4 | 2 | 2 | 2.4 | 2 | 4 | 4 | - 16 1/4 | -.162500 | 6 1-2 | 15 | 2 | - | 15 | 3 | 4 |
| - 2 7/16 | -.024375 | - 109.2 | 2 | 3 | 1.2 | 2 | 5 | 6 | - 16 1/2 | -.165000 | 6 67.2 | 15 | 4 | 3.2 | 15 | 8 | 0 |
| - 2 1/2 | -.025000 | 1 -. | 2 | 4 | - | 2 | 6 | 8 | - 16 3/4 | -.167500 | 6 78.4 | 15 | 7 | 2.4 | 15 | 12 | 8 |
| - 2 9/16 | -.025625 | 1 2.8 | 2 | 4 | 2.8 | 2 | 7 | 10 | - 17 | -.170000 | 6 89.6 | 15 | 10 | 1.6 | 15 | 17 | 4 |
| - 2 5/8 | -.026250 | 1 5.6 | 2 | 5 | 1.6 | 2 | 9 | 0 | - 17 1/4 | -.172500 | 6 100.8 | 16 | 1 | 0.8 | 16 | 2 | 0 |
| - 2 11/16 | -.026875 | 1 8.4 | 2 | 6 | 0.4 | 2 | 10 | 2 | - 17 1/2 | -.175000 | 7 - | 16 | 4 | - | 16 | 6 | 8 |
| - 2 3/4 | -.027500 | 1 11.2 | 2 | 6 | 3.2 | 2 | 11 | 4 | - 17 3/4 | -.177500 | 7 11.2 | 16 | 6 | 3.2 | 16 | 11 | 4 |
| - 3 | -.030000 | 1 22.4 | 2 | 9 | 2.4 | 2 | 16 | 0 | - 18 | -.180000 | 7 22.4 | 16 | 9 | 2.4 | 16 | 16 | 0 |
| - 3 1/4 | -.032500 | 1 33.6 | 3 | 0 | 1.6 | 3 | 0 | 8 | - 18 1/4 | -.182500 | 7 33.6 | 17 | 0 | 1.6 | 17 | 0 | 8 |
| - 3 1/2 | -.035000 | 1 44.8 | 3 | 3 | 0.8 | 3 | 5 | 4 | - 18 1/2 | -.185000 | 7 44.8 | 17 | 3 | 0.8 | 17 | 5 | 4 |
| - 3 3/4 | -.037500 | 1 1-2 | 3 | 6 | - | 3 | 10 | 0 | - 18 3/4 | -.187500 | 7 1-2 | 17 | 6 | - | 17 | 10 | 0 |
| - 4 | -.040000 | 1 67.2 | 3 | 8 | 3.2 | 3 | 14 | 8 | - 19 | -.190000 | 7 67.2 | 17 | 8 | 3.2 | 17 | 14 | 8 |
| - 4 1/4 | -.042000 | 1 78.4 | 3 | 11 | 2.4 | 3 | 19 | 4 | - 19 1/4 | -.192500 | 7 78.4 | 17 | 11 | 2.4 | 17 | 19 | 4 |
| - 4 1/2 | -.045000 | 1 89.6 | 4 | 2 | 1.6 | 4 | 4 | 0 | - 19 1/2 | -.195000 | 7 89.6 | 18 | 2 | 1.6 | 18 | 4 | 0 |
| - 4 3/4 | -.047500 | 1 100.8 | 4 | 5 | 0.8 | 4 | 8 | 8 | - 19 3/4 | -.197500 | 7 100.8 | 18 | 5 | 0.8 | 18 | 8 | 8 |
| - 5 | -.050000 | 2 - | 4 | 8 | - | 4 | 13 | 4 | - 20 | -.200000 | 8 - | 18 | 8 | - | 18 | 13 | 4 |
| - 5 1/4 | -.052500 | 2 11.2 | 4 | 10 | 3.2 | 4 | 18 | 0 | - 20 1/4 | -.202500 | 8 11.2 | 18 | 10 | 3.2 | 18 | 18 | 0 |
| - 5 1/2 | -.055000 | 2 22.4 | 5 | 1 | 2.4 | 5 | 2 | 8 | - 20 1/2 | -.205000 | 8 22.4 | 19 | 1 | 2.4 | 19 | 2 | 8 |
| - 5 3/4 | -.057500 | 2 33.6 | 5 | 4 | 1.6 | 5 | 7 | 4 | - 20 3/4 | -.207500 | 8 33.6 | 19 | 4 | 1.6 | 19 | 7 | 4 |
| - 6 | -.060000 | 2 44.8 | 5 | 7 | 0.8 | 5 | 12 | 0 | - 21 | -.210000 | 8 44.8 | 19 | 7 | 0.8 | 19 | 12 | 0 |
| - 6 1/4 | -.062500 | 2 1-2 | 5 | 10 | - | 5 | 16 | 8 | - 21 1/4 | -.212500 | 8 1-2 | 19 | 10 | - | 19 | 16 | 8 |
| - 6 1/2 | -.065000 | 2 67.2 | 6 | 0 | 3.2 | 6 | 1 | 4 | - 21 1/2 | -.215000 | 8 67.2 | 20 | 0 | 3.2 | 20 | 1 | 4 |
| - 6 3/4 | -.067500 | 2 78.4 | 6 | 3 | 2.4 | 6 | 6 | 0 | - 22 | -.220000 | 8 89.6 | 20 | 6 | 1.6 | 20 | 10 | 8 |

## TABLE III.—Showing Merchandize per lb. in Tenpennies, and Equivalents per lb., Cwt., and Ton in Sterling.

| TENPENNIES. | | STERLING. | | | | | | |
|---|---|---|---|---|---|---|---|---|
| lb. | 1 to 10,000 lbs. | lb. | Cwt. | | | Ton. | | |
| Cents. | Tenp. | F. 112. | S. | D. | F. | £. | S. | D. |
| - 22½ | -.225000 | 9 - | 21 | - | - | 21 | 0 | 0 |
| - 23 | -.230000 | 9 22.4 | 21 | 5 | 2.4 | 21 | 9 | 4 |
| - 23½ | -.235000 | 9 44.8 | 21 | 11 | 0.8 | 21 | 18 | 8 |
| - 24 | -.240000 | 9 67.2 | 22 | 4 | 3.2 | 22 | 8 | 0 |
| - 24½ | -.245000 | 9 89.6 | 22 | 10 | 1.6 | 22 | 17 | 4 |
| - 25 | -.250000 | 10 - | 23 | 4 | - | 23 | 6 | 8 |
| - 25½ | -.255000 | 10 22.4 | 23 | 9 | 2.4 | 23 | 16 | 0 |
| - 26 | -.260000 | 10 44.8 | 24 | 3 | 0.8 | 24 | 5 | 4 |
| - 26½ | -.265000 | 10 67.2 | 24 | 8 | 3.2 | 24 | 14 | 8 |
| - 27 | -.270000 | 10 89.6 | 25 | 2 | 1.6 | 25 | 4 | 0 |
| - 27½ | -.275000 | 11 - | 25 | 8 | - | 25 | 13 | 4 |
| - 28 | -.280000 | 11 22.4 | 26 | 1 | 2.4 | 26 | 2 | 8 |
| - 28½ | -.285000 | 11 44.8 | 26 | 7 | 0.8 | 26 | 12 | 0 |
| - 29 | -.290000 | 11 67.2 | 27 | 0 | 3.2 | 27 | 1 | 4 |
| - 29½ | -.295000 | 11 89.6 | 27 | 6 | 1.6 | 27 | 10 | 8 |
| - 30 | -.300000 | 12 - | 28 | - | - | 28 | 0 | 0 |
| - 30½ | -.305000 | 12 22.4 | 28 | 5 | 2.4 | 28 | 9 | 4 |
| - 31 | -.310000 | 12 44.8 | 28 | 11 | 0.8 | 28 | 18 | 8 |
| - 31½ | -.315000 | 12 67.2 | 29 | 4 | 3.2 | 29 | 8 | 0 |
| - 32 | -.320000 | 12 89.6 | 29 | 10 | 1.6 | 29 | 17 | 4 |
| - 32½ | -.325000 | 13 - | 30 | 4 | - | 30 | 6 | 8 |
| - 33 | -.330000 | 13 22.4 | 30 | 9 | 2.4 | 30 | 16 | 0 |
| - 33½ | -.335000 | 13 44.8 | 31 | 3 | 0 8 | 31 | 5 | 4 |
| - 34 | -.340000 | 13 67.2 | 31 | 8 | 3.2 | 31 | 14 | 8 |
| - 34½ | -.345000 | 13 89.6 | 32 | 2 | 1.6 | 32 | 4 | 0 |
| - 35 | -.350000 | 14 - | 32 | 8 | - | 32 | 13 | 4 |
| - 35½ | -.355000 | 14 22.4 | 33 | 1 | 2.4 | 33 | 2 | 8 |
| - 36 | -.360000 | 14 44.8 | 33 | 7 | 0.8 | 33 | 12 | 0 |
| - 36½ | -.365000 | 14 67.2 | 34 | 0 | 3.2 | 34 | 1 | 4 |
| - 37 | -.370000 | 14 89.6 | 34 | 6 | 1.6 | 34 | 10 | 8 |
| - 37½ | -.375000 | 15 - | 35 | - | - | 35 | 0 | 0 |
| - 38 | -.380000 | 15 22.4 | 35 | 5 | 2.4 | 35 | 9 | 4 |
| - 38½ | -.385000 | 15 44.8 | 35 | 11 | 0.8 | 35 | 18 | 8 |
| - 39 | -.390000 | 15 67.2 | 36 | 4 | 3.2 | 36 | 8 | 0 |
| - 39½ | -.395000 | 15 89.6 | 36 | 10 | 1.6 | 36 | 17 | 4 |
| - 40 | -.400000 | 16 - | 37 | 4 | - | 37 | 6 | 8 |
| - 40½ | -.405000 | 16 22.4 | 37 | 9 | 2.4 | 37 | 16 | 0 |
| - 41 | -.410000 | 16 44.8 | 38 | 3 | 0.8 | 38 | 5 | 4 |
| - 41½ | -.415000 | 16 67.2 | 38 | 8 | 3.2 | 38 | 14 | 8 |
| - 42 | -.420000 | 16 89.6 | 39 | 2 | 1.6 | 39 | 4 | 0 |
| - 42½ | -.425000 | 17 - | 39 | 8 | - | 39 | 13 | 4 |
| - 43 | -.430000 | 17 22.4 | 40 | 1 | 2.4 | 40 | 2 | 8 |
| - 43½ | -.435000 | 17 44.8 | 40 | 7 | 0.8 | 40 | 12 | 0 |
| - 44 | -.440000 | 17 67.2 | 41 | 0 | 3.2 | 41 | 1 | 4 |
| - 45 | -.450000 | 18 - | 42 | - | - | 42 | 0 | 0 |
| - 46 | -.460000 | 18 44.8 | 42 | 11 | 0.8 | 42 | 18 | 8 |
| - 47 | -.470000 | 18 89.6 | 43 | 10 | 1.6 | 43 | 17 | 4 |
| - 48 | -.480000 | 19 22.4 | 44 | 9 | 2.4 | 44 | 16 | 0 |
| - 49 | -.490000 | 19 67.2 | 45 | 8 | 3.2 | 45 | 14 | 8 |
| - 50 | -.500000 | 20 - | 46 | 8 | - | 46 | 13 | 4 |
| - 51 | -.510000 | 20 44.8 | 47 | 7 | 0.8 | 47 | 12 | 0 |
| - 52 | -.520000 | 20 89.6 | 48 | 6 | 1.6 | 48 | 10 | 8 |
| - 53 | -.530000 | 21 22.4 | 49 | 5 | 2.4 | 49 | 9 | 4 |
| - 54 | -.540000 | 21 67.2 | 50 | 4 | 3.2 | 50 | 8 | 0 |
| - 55 | -.550000 | 22 - | 51 | 4 | - | 51 | 6 | 8 |
| - 56 | -.560000 | 22 44.8 | 52 | 3 | 0.8 | 52 | 5 | 4 |
| - 57 | -.570000 | 22 89.6 | 53 | 2 | 1.6 | 53 | 4 | 0 |
| - 58 | -.580000 | 23 22.4 | 54 | 1 | 2.4 | 54 | 2 | 8 |
| - 59 | -.590000 | 23 67.2 | 55 | 0 | 3.2 | 55 | 1 | 4 |
| - 60 | -.600000 | 24 - | 56 | - | - | 56 | 0 | 0 |
| Ton. Cts. | Tenp. | F. 112. | S. | D. | F. | £. | S. | D. |
| - 61 | -.610000 | 24 44.8 | 56 | 11 | 0.8 | 56 | 18 | 8 |
| - 62 | -.620000 | 24 89.6 | 57 | 10 | 1.6 | 56 | 17 | 4 |
| - 63 | -.630000 | 25 22.4 | 58 | 9 | 2.4 | 58 | 16 | 0 |
| - 64 | -.640000 | 25 67.2 | 59 | 8 | 3.2 | 59 | 14 | 8 |
| - 65 | -.650000 | 26 - | 60 | 8 | - | 60 | 13 | 4 |
| - 66 | -.660000 | 26 44.8 | 61 | 7 | 0.8 | 61 | 12 | 0 |
| - 67 | -.670000 | 26 89.6 | 62 | 6 | 1.6 | 62 | 10 | 8 |
| - 68 | -.680000 | 27 22.4 | 63 | 5 | 2.4 | 63 | 9 | 4 |
| - 69 | -.690000 | 27 67.2 | 64 | 4 | 3.2 | 64 | 8 | 0 |
| - 70 | -.700000 | 28 - | 65 | 4 | - | 65 | 6 | 8 |
| - 71 | -.710000 | 28 44.8 | 66 | 3 | 0.8 | 66 | 5 | 4 |
| - 72 | -.720000 | 28 89.6 | 67 | 2 | 1.6 | 67 | 4 | 0 |
| - 73 | -.730000 | 29 22.4 | 68 | 1 | 2.4 | 68 | 2 | 8 |
| - 74 | -.740000 | 29 67.2 | 69 | 0 | 3.2 | 69 | 1 | 4 |
| - 75 | -.750000 | 30 - | 70 | - | - | 70 | 0 | 0 |
| - 76 | -.760000 | 30 44.8 | 70 | 11 | 0.8 | 70 | 18 | 8 |
| - 77 | -.770000 | 30 89.6 | 71 | 10 | 1.6 | 71 | 17 | 4 |
| - 78 | -.780000 | 31 22.4 | 72 | 9 | 2.4 | 72 | 16 | 0 |
| - 79 | -.790000 | 31 67.2 | 73 | 8 | 3.2 | 73 | 14 | 8 |
| - 80 | -.800000 | 32 - | 73 | 8 | - | 74 | 13 | 4 |
| - 81 | -.810000 | 32 44.8 | 75 | 7 | 0.8 | 75 | 12 | 0 |
| - 82 | -.820000 | 32 89.6 | 76 | 6 | 1.6 | 76 | 10 | 8 |
| - 83 | -.830000 | 33 22.4 | 77 | 5 | 2.4 | 77 | 9 | 4 |
| - 84 | -.840000 | 33 67.2 | 78 | 4 | 3.2 | 78 | 8 | 0 |
| - 85 | -.850000 | 34 - | 79 | 4 | - | 79 | 6 | 8 |
| - 86 | -.860000 | 34 44.8 | 80 | 3 | 0.8 | 80 | 5 | 4 |
| - 87 | -.870000 | 34 89.6 | 81 | 2 | 1.6 | 81 | 4 | 0 |
| - 88 | -.880000 | 35 22.4 | 82 | 1 | 2.4 | 82 | 2 | 8 |
| - 89 | -.890000 | 35 67.2 | 83 | 0 | 3.2 | 83 | 1 | 4 |
| - 90 | -.900000 | 36 - | 84 | - | - | 84 | 0 | 0 |
| - 91 | -.910000 | 36 44.8 | 84 | 11 | 0.8 | 84 | 18 | 8 |
| - 92 | -.920000 | 36 89.6 | 85 | 10 | 1.6 | 85 | 17 | 4 |
| - 93 | -.930000 | 37 22.4 | 86 | 9 | 2.4 | 86 | 16 | 0 |
| - 94 | -.940000 | 37 67.2 | 87 | 8 | 3.2 | 87 | 14 | 8 |
| - 95 | -.950000 | 38 - | 88 | 8 | - | 88 | 13 | 4 |
| - 96 | -.960000 | 38 44.8 | 89 | 7 | 0.8 | 89 | 12 | 0 |
| - 97 | -.970000 | 38 89.6 | 90 | 6 | 1.6 | 90 | 10 | 8 |
| - 98 | -.980000 | 39 22.4 | 91 | 5 | 2.4 | 91 | 9 | 4 |
| - 99 | -.990000 | 39 67.2 | 92 | 4 | 3.2 | 92 | 8 | 0 |
| 1 - | 1.000000 | 40 - | 93 | 4 | - | 93 | 6 | 8 |
| 1 1 | 1.010000 | 40 44.8 | 94 | 3 | 0.8 | 94 | 5 | 4 |
| 1 2 | 1.020000 | 40 89.6 | 95 | 2 | 1.6 | 95 | 4 | 0 |
| 1 3 | 1.030000 | 41 22.4 | 96 | 1 | 2.4 | 96 | 2 | 8 |
| 1 4 | 1.040000 | 41 67.2 | 97 | 0 | 3.2 | 97 | 1 | 4 |
| 1 5 | 1.050000 | 42 - | 98 | - | - | 98 | 0 | 0 |
| 1 6 | 1.060000 | 42 44.8 | 98 | 11 | 0.8 | 98 | 18 | 8 |
| 1 7 | 1.070000 | 42 89.6 | 99 | 10 | 1.6 | 99 | 17 | 4 |
| 1 8 | 1.080000 | 43 22.4 | 100 | 9 | 2.4 | 100 | 16 | 0 |
| 1 9 | 1.090000 | 43 67.2 | 101 | 8 | 3.2 | 101 | 14 | 8 |
| 1 10 | 1.100000 | 44 - | 102 | 8 | - | 102 | 13 | 4 |
| 1 11 | 1.110000 | 44 44.8 | 103 | 7 | 0.8 | 103 | 12 | 0 |
| 1 12 | 1.120000 | 44 89.6 | 104 | 6 | 1.6 | 104 | 10 | 8 |
| 1 13 | 1.130000 | 45 22.4 | 105 | 5 | 2.4 | 105 | 9 | 4 |
| 1 14 | 1.140000 | 45 67.2 | 106 | 4 | 3.2 | 106 | 8 | 0 |
| 1 15 | 1.150000 | 46 - | 107 | 4 | - | 107 | 6 | 8 |
| 1 16 | 1.160000 | 46 44.8 | 108 | 3 | 0.8 | 108 | 5 | 4 |
| 1 17 | 1.170000 | 46 89.6 | 109 | 2 | 1.6 | 109 | 4 | 0 |
| 1 18 | 1.180000 | 47 22.4 | 110 | 1 | 2.4 | 110 | 2 | 8 |
| 1 19 | 1.190000 | 47 67.2 | 111 | - | 3.2 | 111 | 1 | 4 |
| 1 20 | 1.200000 | 48 - | 112 | - | - | 112 | 0 | 0 |

## TABLE IV.—Showing French Merchandize at the following Prices and Profits per Cent.

| Price. | | 2½ ⅌ Cent. | 5 ⅌ Cent. | 7½ ⅌ Cent. | 10 ⅌ Cent. | 12½ ⅌ Cent. | 15 ⅌ Cent. | 17½ ⅌ Cent. | 20 ⅌ Cent. |
|---|---|---|---|---|---|---|---|---|---|
| Fcs. | Ces. | Francs. | Francs. | Francs. | Francs. | Francs. | Francs. | Francs. | Francs. |
| 0 | 2½ | -.025625 | -.026250 | -.026875 | -.027500 | -.028125 | -.028750 | -.029375 | -.030000 |
| - | 5 | -.051250 | -.052500 | -.053750 | -.055000 | -.056250 | -.057500 | -.058750 | -.060000 |
| - | 7½ | -.076875 | -.078750 | -.080625 | -.082500 | -.084375 | -.086250 | -.088125 | -.090000 |
| - | 10 | -.102500 | -.105000 | -.107500 | -.110000 | -.112500 | -.115000 | -.117500 | -.120000 |
| - | 12½ | -.128125 | -.131250 | -.134375 | -.137500 | -.140625 | -.143750 | -.146875 | -.150000 |
| - | 15 | -.153750 | -.157500 | -.161250 | -.165000 | -.168750 | -.172500 | -.176250 | -.180000 |
| - | 17½ | -.179375 | -.183750 | -.188125 | -.192500 | -.196875 | -.201250 | -.205625 | -.210000 |
| - | 20 | -.205000 | -.210000 | -.215000 | -.220000 | -.225000 | -.230000 | -.235000 | -.240000 |
| - | 22½ | -.230625 | -.236250 | -.241875 | -.247500 | -.253125 | -.258750 | -.264375 | -.270000 |
| - | 25 | -.256250 | -.262500 | -.268750 | -.275000 | -.281250 | -.287500 | -.293750 | -.300000 |
| - | 27½ | -.281875 | -.288750 | -.295625 | -.302500 | -.309375 | -.316250 | -.323125 | -.330000 |
| - | 30 | -.307500 | -.315000 | -.322500 | -.330000 | -.337500 | -.345000 | -.352500 | -.360000 |
| - | 32½ | -.333125 | -.341250 | -.349375 | -.357500 | -.365625 | -.373750 | -.381875 | -.390000 |
| - | 35 | -.358750 | -.367500 | -.376250 | -.385000 | -.393750 | -.402500 | -.411250 | -.420000 |
| - | 37½ | -.384375 | -.393750 | -.403125 | -.412500 | -.421875 | -.431250 | -.440625 | -.450000 |
| - | 40 | -.410000 | -.420000 | -.430000 | -.440000 | -.450000 | -.460000 | -.470000 | -.480000 |
| - | 42½ | -.435625 | -.446250 | -.456875 | -.467500 | -.478125 | -.488750 | -.499375 | -.510000 |
| - | 45 | -.461250 | -.472500 | -.483750 | -.495000 | -.506250 | -.517500 | -.528750 | -.540000 |
| - | 47½ | -.486875 | -.498750 | -.510625 | -.522500 | -.534375 | -.546250 | -.558125 | -.570000 |
| - | 50 | -.512500 | -.525000 | -.537500 | -.550000 | -.562500 | -.575000 | -.587500 | -.600000 |
| - | 52½ | -.538125 | -.551250 | -.564375 | -.577500 | -.590625 | -.603750 | -.616875 | -.630000 |
| - | 55 | -.563750 | -.577500 | -.591250 | -.605000 | -.618750 | -.632500 | -.646250 | -.660000 |
| - | 57½ | -.589375 | -.603750 | -.618125 | -.632500 | -.646875 | -.661250 | -.675625 | -.690000 |
| - | 60 | -.615000 | -.630000 | -.645000 | -.660000 | -.675000 | -.690000 | -.705000 | -.720000 |
| - | 62½ | -.640625 | -.656250 | -.671875 | -.687500 | -.703125 | -.718750 | -.734375 | -.750000 |
| - | 65 | -.666250 | -.682500 | -.698750 | -.715000 | -.731250 | -.747500 | -.763750 | -.780000 |
| - | 67½ | -.691875 | -.708750 | -.725625 | -.742500 | -.759375 | -.776250 | -.793125 | -.810000 |
| - | 70 | -.717500 | -.735000 | -.752500 | -.770000 | -.787500 | -.805000 | -.822500 | -.840000 |
| - | 72½ | -.743125 | -.761250 | -.779375 | -.797500 | -.815625 | -.833750 | - 851875 | -.870000 |
| - | 75 | -.768750 | -.787500 | -.806250 | -.825000 | -.843750 | -.862500 | -.881250 | -.900000 |
| - | 77½ | -.794375 | -.813750 | -.833125 | -.852500 | -.871875 | -.891250 | -.910625 | -.930000 |
| - | 80 | -.820000 | -.840000 | -.860000 | -.880000 | -.900000 | -.920000 | -.940000 | -.960000 |
| - | 82½ | -.845625 | -.866250 | -.886875 | -.907500 | -.928125 | -.948750 | -.969375 | -.990000 |
| - | 85 | -.871250 | -.892500 | -.913750 | -.935000 | -.956250 | -.977500 | -.998750 | 1.020000 |
| - | 87½ | -.896875 | -.918750 | -.940625 | -.962500 | -.984375 | 1.006250 | 1.028125 | 1.050000 |
| - | 90 | -.922500 | -.945000 | -.967500 | -.990000 | 1.012500 | 1.035000 | 1.057500 | 1.080000 |
| - | 92½ | -.948125 | -.971250 | -.994375 | 1.017500 | 1.040625 | 1.063750 | 1.086875 | 1.110000 |
| - | 95 | -.973750 | -.997500 | 1.021250 | 1.045000 | 1.068750 | 1.092500 | 1.116250 | 1.140000 |
| - | 97½ | -.999375 | 1.023750 | 1.048125 | 1.072500 | 1.096875 | 1.121250 | 1.145625 | 1.170000 |
| 1 | - | 1.025000 | 1.050000 | 1.075000 | 1.100000 | 1.125000 | 1.150000 | 1.175000 | 1.200000 |
| 2 | - | 2.050000 | 2.100000 | 2.150000 | 2.200000 | 2.250000 | 2.300000 | 2.350000 | 2.400000 |
| 3 | - | 3.075000 | 3.150000 | 3.225000 | 3.300000 | 3.375000 | 3.450000 | 3.525000 | 3.600000 |
| 4 | - | 4.100000 | 4.200000 | 4.300000 | 4.400000 | 4.500000 | 4.600000 | 4.700000 | 4.800000 |
| 5 | - | 5.125000 | 5.250000 | 5.375000 | 5.500000 | 5.625000 | 5.750000 | 5.875000 | 6.000000 |
| 6 | - | 6.150000 | 6.300000 | 6.450000 | 6.600000 | 6.750000 | 6.900000 | 7.050000 | 7.200000 |
| 7 | - | 7.175000 | 7.350000 | 7.525000 | 7.700000 | 7.875000 | 8.050000 | 8.225000 | 8.400000 |
| 8 | - | 8.200000 | 8.400000 | 8.600000 | 8.800000 | 9.000000 | 9.200000 | 9.400000 | 9.600000 |
| 9 | - | 9.225000 | 9.450000 | 9.675000 | 9.900000 | 10.125000 | 10.350000 | 10.575000 | 10.800000 |
| 10 | - | 10.250000 | 10.500000 | 10.750000 | 11.000000 | 11.250000 | 11.500000 | 11.750000 | 12.000000 |
| 11 | - | 11.275000 | 11.550000 | 11.825000 | 12.100000 | 12.375000 | 12.650000 | 12.925000 | 13.200000 |
| 12 | - | 12.300000 | 12.600000 | 12.900000 | 13.200000 | 13.500000 | 13.800000 | 14.100000 | 14.400000 |
| 13 | - | 13.325000 | 13.650000 | 13.975000 | 14.300000 | 14.625000 | 14.950000 | 15.275000 | 15.600000 |
| 14 | - | 14.350000 | 14.700000 | 15.050000 | 15.400000 | 15.750000 | 16.100000 | 16.450000 | 16.800000 |
| 15 | - | 15.375000 | 15.750000 | 16.125000 | 16.500000 | 16.875000 | 17.250000 | 17.625000 | 18.000000 |
| 16 | - | 16.400000 | 16.800000 | 17.200000 | 17.600000 | 18.000000 | 18.400000 | 18.800000 | 19.200000 |
| 17 | - | 17.425000 | 17.850000 | 18.275000 | 18.700000 | 19.125000 | 19.550000 | 19.975000 | 20.400000 |
| 18 | - | 18.450000 | 18.900000 | 19.350000 | 19.800000 | 20.250000 | 20.700000 | 21.150000 | 21.600000 |
| 19 | - | 19.475000 | 19.950000 | 20.425000 | 20.900000 | 21.375000 | 21.850000 | 22.325000 | 22.800000 |
| 20 | - | 20.500000 | 21.000000 | 21.500000 | 22.000000 | 22.500000 | 23.000000 | 23.500000 | 24.000000 |
| 21 | - | 21.525000 | 22.050000 | 22.575000 | 23.100000 | 23.625000 | 24.150000 | 24.675000 | 25.200000 |
| 22 | - | 22.550000 | 23.100000 | 23.650000 | 24.200000 | 24.750000 | 25.300000 | 25.850000 | 26.400000 |
| 23 | - | 23.575000 | 24.150000 | 24.725000 | 25.300000 | 25.875000 | 26.450000 | 27.025000 | 27.600000 |
| 24 | - | 24.600000 | 25.200000 | 25.800000 | 26.400000 | 27.000000 | 27.600000 | 28.200000 | 28.800000 |
| 25 | - | 25.625000 | 26.250000 | 26.875000 | 27.500000 | 28.125000 | 28.750000 | 29.375000 | 30.000000 |

# TABLE IV.—Showing French Merchandize at the following Prices and Profits per Cent.

| Price. | | 22½ ℘ Cent. | 25 ℘ Cent. | 27½ ℘ Cent. | 30 ℘ Cent. | 32½ ℘ Cent. | 35 ℘ Cent. | 37½ ℘ Cent. | 40 ℘ Cent. |
|---|---|---|---|---|---|---|---|---|---|
| Fcs. | Ces. | Francs. | Francs. | Francs. | Francs. | Francs. | Francs. | Francs. | Francs. |
| - | 2½ | -.030625 | -.031250 | -.031875 | -.032500 | -.033125 | -.033750 | -.034375 | -.035000 |
| - | 5 | -.061250 | -.062500 | -.063750 | -.065000 | -.066250 | -.067500 | -.068750 | -.070000 |
| - | 7½ | -.091875 | -.093750 | -.095625 | -.097500 | -.099375 | -.101250 | -.103125 | -.105000 |
| - | 10 | -.122500 | -.125000 | -.127500 | -.130000 | -.132500 | -.135000 | -.137500 | -.140000 |
| - | 12½ | -.153125 | -.156250 | -.159375 | -.162500 | -.165625 | -.168750 | -.171875 | -.175000 |
| - | 15 | -.183750 | -.187500 | -.191250 | -.195000 | -.198750 | -.202500 | -.206250 | -.210000 |
| - | 17½ | -.214375 | -.218750 | -.223125 | -.227500 | -.231875 | -.236250 | -.240625 | -.245000 |
| - | 20 | -.245000 | -.250000 | -.255000 | -.260000 | -.265000 | -.270000 | -.275000 | -.280000 |
| - | 22½ | -.275625 | -.281250 | -.286875 | -.292500 | -.298125 | -.303750 | -.309375 | -.315000 |
| - | 25 | -.306250 | -.312500 | -.318750 | -.325000 | -.331250 | -.337500 | -.343750 | -.350000 |
| - | 27½ | -.336875 | -.343750 | -.350625 | -.357500 | -.364375 | -.371250 | -.378125 | -.385000 |
| - | 30 | -.367500 | -.375000 | -.382500 | -.390000 | -.397500 | -.405000 | -.412500 | -.420000 |
| - | 32½ | -.398125 | -.406250 | -.414375 | -.422500 | -.430625 | -.438750 | -.446875 | -.455000 |
| - | 35 | -.428750 | -.437500 | -.446250 | -.455000 | -.463750 | -.472500 | -.481250 | -.490000 |
| - | 37½ | -.459375 | -.468750 | -.478125 | -.487500 | -.496875 | -.506250 | -.515625 | -.525000 |
| - | 40 | -.490000 | -.500000 | -.510000 | -.520000 | -.530000 | -.540000 | -.550000 | -.560000 |
| - | 42½ | -.520625 | -.531250 | -.541875 | -.552500 | -.563125 | -.573750 | -.584375 | -.595000 |
| - | 45 | -.551250 | -.562500 | -.573750 | -.585000 | -.596250 | -.607500 | -.618750 | -.630000 |
| - | 47½ | -.581875 | -.593750 | -.605625 | -.617500 | -.629375 | -.641250 | -.653125 | -.665000 |
| - | 50 | -.612500 | -.625000 | -.637500 | -.650000 | -.662500 | -.675000 | -.687500 | -.700000 |
| - | 52½ | -.643125 | -.656250 | -.669375 | -.682500 | -.695625 | -.708750 | -.721875 | -.735000 |
| - | 55 | -.673750 | -.687500 | -.701250 | -.715000 | -.728750 | -.742500 | -.756250 | -.770000 |
| - | 57½ | -.704375 | -.718750 | -.733125 | -.747500 | -.761875 | -.776250 | -.790625 | -.805000 |
| - | 60 | -.735000 | -.750000 | -.765000 | -.780000 | -.795000 | -.810000 | -.825000 | -.840000 |
| - | 62½ | -.765625 | -.781250 | -.796875 | -.812500 | -.828125 | -.843750 | -.859375 | -.875000 |
| - | 65 | -.796250 | -.812500 | -.828750 | -.845000 | -.861250 | -.877500 | -.893750 | -.910000 |
| - | 67½ | -.826875 | -.843750 | -.860625 | -.877500 | -.894375 | -.911250 | -.928125 | -.945000 |
| - | 70 | -.857500 | -.875000 | -.892500 | -.910000 | -.927500 | -.945000 | -.962500 | -.980000 |
| - | 72½ | -.888125 | -.906250 | -.924375 | -.942500 | -.960625 | -.978750 | -.996875 | 1.015000 |
| - | 75 | -.918750 | -.937500 | -.956250 | -.975000 | -.993750 | 1.012500 | 1.031250 | 1.050000 |
| - | 77½ | -.949375 | -.968750 | -.988125 | 1.007500 | 1.026875 | 1.046250 | 1.065625 | 1.085000 |
| - | 80 | -.980000 | 1.000000 | 1.020000 | 1.040000 | 1.060000 | 1.080000 | 1.100000 | 1.120000 |
| - | 82½ | 1.010625 | 1.031250 | 1.051875 | 1.072500 | 1.093125 | 1.113750 | 1.134375 | 1.155000 |
| - | 85 | 1.041250 | 1.062500 | 1.083750 | 1.105000 | 1.126250 | 1.147500 | 1.168750 | 1.190000 |
| - | 87½ | 1.071875 | 1.093750 | 1.115625 | 1.137500 | 1.159375 | 1.181250 | 1.203125 | 1.225000 |
| - | 90 | 1.102500 | 1.125000 | 1.147500 | 1.170000 | 1.192500 | 1.215000 | 1.237500 | 1.260000 |
| - | 92½ | 1.133125 | 1.156250 | 1.179375 | 1.202500 | 1.225625 | 1.248750 | 1.271875 | 1.295000 |
| - | 95 | 1.163750 | 1.187500 | 1.211250 | 1.235000 | 1.258750 | 1.282500 | 1.306250 | 1.330000 |
| - | 97½ | 1.194375 | 1.218750 | 1.243125 | 1.267500 | 1.291875 | 1 316250 | 1.340625 | 1.365000 |
| 1 | - | 1.225000 | 1.250000 | 1.275000 | 1.300000 | 1.325000 | 1.350000 | 1.375000 | 1.400000 |
| 2 | - | 2.450000 | 2.500000 | 2.550000 | 2.600000 | 2.650000 | 2.700000 | 2.750000 | 2.800000 |
| 3 | - | 3.675000 | 3.750000 | 3.825000 | 3.900000 | 3.975000 | 4.050000 | 4.125000 | 4.200000 |
| 4 | - | 4.900000 | 5.000000 | 5.100000 | 5.200000 | 5.300000 | 5.400000 | 5.500000 | 5.600000 |
| 5 | - | 6.125000 | 6.250000 | 6.375000 | 6.500000 | 6.625000 | 6.750000 | 6.875000 | 7.000000 |
| 6 | - | 7.350000 | 7.500000 | 7.650000 | 7.800000 | 7.950000 | 8.100000 | 8.250000 | 8.400000 |
| 7 | - | 8.575000 | 8.750000 | 8.925000 | 9.100000 | 9.275000 | 9.450000 | 9.625000 | 9.800000 |
| 8 | - | 9.800000 | 10.000000 | 10.200000 | 10.400000 | 10.600000 | 10.800000 | 11.000000 | 11.200000 |
| 9 | - | 11.025000 | 11.250000 | 11.475000 | 11.700000 | 11.925000 | 12.150000 | 12.375000 | 12.600000 |
| 10 | - | 12.250000 | 12.500000 | 12.750000 | 13.000000 | 13.250000 | 13.500000 | 13.750000 | 14.000000 |
| 11 | - | 13.475000 | 13.750000 | 14.025000 | 14.300000 | 14.575000 | 14.850000 | 15.125000 | 15.400000 |
| 12 | - | 14.700000 | 15.000000 | 15.300000 | 15.600000 | 15.900000 | 16.200000 | 16.500000 | 16.800000 |
| 13 | - | 15.925000 | 16.250000 | 16.575000 | 16.900000 | 17.225000 | 17.550000 | 17.875000 | 18.200000 |
| 14 | - | 17.150000 | 17.500000 | 17.850000 | 18.200000 | 18.550000 | 18.900000 | 19.250000 | 19.600000 |
| 15 | - | 18.375000 | 18.750000 | 19.125000 | 19.500000 | 19.875000 | 20.250000 | 20.625000 | 21.000000 |
| 16 | - | 19.600000 | 20.000000 | 20.400000 | 20.800000 | 21.200000 | 21.600000 | 22.000000 | 22.400000 |
| 17 | - | 20.825000 | 21.250000 | 21.675000 | 22.100000 | 22.525000 | 22.950000 | 23.375000 | 23.800000 |
| 18 | - | 22.050000 | 22.500000 | 22.950000 | 23.400000 | 23.850000 | 24.300000 | 24.750000 | 25.200000 |
| 19 | - | 23.275000 | 23.750000 | 24.225000 | 24.700000 | 25.175000 | 25.650000 | 26.125000 | 26.600000 |
| 20 | - | 24.500000 | 25.000000 | 25.500000 | 26.000000 | 26.500000 | 27.000000 | 27.500000 | 28.000000 |
| 21 | - | 25.725000 | 26.250000 | 26.775000 | 27.300000 | 27.825000 | 28.350000 | 28.875000 | 29.400000 |
| 22 | - | 26.950000 | 27.500000 | 28.050000 | 28.600000 | 29.150000 | 29.700000 | 30.250000 | 30.800000 |
| 23 | - | 28.175000 | 28.750000 | 29.325000 | 29.900000 | 30.475000 | 31.050000 | 31.625000 | 32.200000 |
| 24 | - | 29.400000 | 30.000000 | 30.600000 | 31.200000 | 31.800000 | 32.400000 | 33.000000 | 33.600000 |
| 25 | - | 30.625000 | 31.250000 | 31.875000 | 32.500000 | 33.125000 | 33.750000 | 34.375000 | 35.000000 |

## TABLE V.—Showing Universal Profits per Cent.

| Prices. | Profit ⅌ Cent. | Prices. | Profit ⅌ Cent. | Prices. | Profit ⅌ Cent. | Prices. | Profit ⅌ Cent. | Prices. | Profit ⅌ Cent |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | 7 | 14.286 | 14 | 7.143 | 21 | 4.762 | 28 | 3.571 |
| 1-8 | 800.000 | 1-8 | 14.035 | 1-8 | 7.080 | 1-8 | 4.734 | 1-8 | 3.556 |
| 1-4 | 400.000 | 1-4 | 14.793 | 1-4 | 7.018 | 1-4 | 4.706 | 1-4 | 3.540 |
| 3-8 | 266.667 | 3-8 | 13.559 | 3-8 | 6.957 | 3-8 | 4.678 | 3-8 | 3.524 |
| 1-2 | 200.000 | 1-2 | 13.333 | 1-2 | 6.897 | 1-2 | 4.651 | 1-2 | 3.509 |
| 5-8 | 160.000 | 5-8 | 13.115 | 5-8 | 6.838 | 5-8 | 4.624 | 5-8 | 3.493 |
| 3-4 | 133.333 | 3-4 | 12.903 | 3-4 | 6.780 | 3-4 | 4.598 | 3-4 | 3.478 |
| 7-8 | 114.286 | 7-8 | 12.698 | 7-8 | 6.723 | 7-8 | 4.571 | 7-8 | 3.463 |
| 1 | 100.000 | 8 | 12.500 | 15 | 6.667 | 22 | 4.545 | 29 | 3.448 |
| 1-8 | 88.889 | 1-8 | 12.308 | 1-8 | 6.612 | 1-8 | 4.520 | 1-8 | 3.433 |
| 1-4 | 80.000 | 1-4 | 12.121 | 1-4 | 6.557 | 1-4 | 4.494 | 1-4 | 3.419 |
| 3-8 | 72.727 | 3-8 | 11.940 | 3-8 | 6.504 | 3-8 | 4.469 | 3-8 | 3.404 |
| 1-2 | 66.667 | 1-2 | 11.765 | 1-2 | 6.452 | 1-2 | 4.444 | 1-2 | 3.390 |
| 5-8 | 61.538 | 5-8 | 11.594 | 5-8 | 6 400 | 5-8 | 4.420 | 5-8 | 3.376 |
| 3-4 | 57.143 | 3-4 | 11.429 | 3-4 | 6.349 | 3-4 | 4.396 | 3-4 | 3.361 |
| 7-8 | 53.333 | 7-8 | 11.268 | 7-8 | 6.299 | 7-8 | 4.372 | 7-8 | 3.347 |
| 2 | 50.000 | 9 | 11.111 | 16 | 6.250 | 23 | 4.348 | 30 | 3.333 |
| 1-8 | 47.059 | 1-8 | 10.959 | 1-8 | 6.202 | 1-8 | 4.324 | 1-8 | 3.320 |
| 1-4 | 44.444 | 1-4 | 10.811 | 1-4 | 6.154 | 1-4 | 4.301 | 1-4 | 3.306 |
| 3-8 | 42.105 | 3-8 | 10.667 | 3-8 | 6.107 | 3-8 | 4.278 | 3-8 | 3.292 |
| 1-2 | 40.000 | 1-2 | 10.526 | 1-2 | 6.061 | 1-2 | 4.255 | 1-2 | 3.279 |
| 5-8 | 38.095 | 5-8 | 10.390 | 5-8 | 6.015 | 5-8 | 4.233 | 5-8 | 3.265 |
| 3-4 | 36.364 | 3-4 | 10.256 | 3-4 | 5.970 | 3-4 | 4.211 | 3-4 | 3.252 |
| 7-8 | 34.783 | 7-8 | 10.127 | 7-8 | 5.926 | 7-8 | 4.188 | 7-8 | 3.239 |
| 3 | 33.333 | 10 | 10.000 | 17 | 5.882 | 24 | 4.167 | 31 | 3.226 |
| 1-8 | 32.000 | 1-8 | 9.877 | 1-8 | 5.839 | 1-8 | 4.145 | 1-8 | 3.213 |
| 1-4 | 30.769 | 1-4 | 9.756 | 1-4 | 5.797 | 1-4 | 4.124 | 1-4 | 3.200 |
| 3-8 | 29.630 | 3-8 | 9.639 | 3-8 | 5.755 | 3-8 | 4.103 | 3-8 | 3.187 |
| 1-2 | 28.571 | 1-2 | 9.524 | 1-2 | 5.714 | 1-2 | 4.082 | 1-2 | 3.175 |
| 5.8 | 27.586 | 5-8 | 9.412 | 5-8 | 5.674 | 5-8 | 4.061 | 5-8 | 3.162 |
| 3-4 | 26.667 | 3-4 | 9.302 | 3-4 | 5.634 | 3-4 | 4.040 | 3-4 | 3.150 |
| 7-8 | 25.806 | 7-8 | 9.195 | 7-8 | 5.594 | 7-8 | 4.020 | 7-8 | 3.137 |
| 4 | 25.000 | 11 | 9.091 | 18 | 5.556 | 25 | 4.000 | 32 | 3.125 |
| 1-8 | 24.242 | 1-8 | 8.989 | 1-8 | 5.517 | 1-8 | 3.980 | 1-8 | 3.113 |
| 1-4 | 23.529 | 1-4 | 8.889 | 1-4 | 5.479 | 1-4 | 3.960 | 1-4 | 3.101 |
| 3-8 | 22.857 | 3-8 | 8.791 | 3-8 | 5.442 | 3-8 | 3.941 | 3-8 | 3.089 |
| 1-2 | 22.222 | 1-2 | 8.696 | 1-2 | 5.405 | 1-2 | 3.922 | 1-2 | 3.077 |
| 5-8 | 21.622 | 5-8 | 8.602 | 5-8 | 5.369 | 5-8 | 3.902 | 5-8 | 3.065 |
| 3-4 | 21.053 | 3-4 | 8.511 | 3-4 | 5.333 | 3-4 | 3.883 | 3-4 | 3.053 |
| 7-8 | 20.513 | 7-8 | 8.421 | 7-8 | 5.298 | 7-8 | 3.865 | 7-8 | 3.042 |
| 5 | 20.000 | 12 | 8.333 | 19 | 5.263 | 26 | 3.846 | 33 | 3.030 |
| 1-8 | 19.512 | 1-8 | 8.247 | 1-8 | 5.229 | 1-8 | 3.828 | 1-8 | 3.019 |
| 1-4 | 19.048 | 1-4 | 8.163 | 1-4 | 5.195 | 1-4 | 3.810 | 1-4 | 3.008 |
| 3-8 | 18.605 | 3-8 | 8.081 | 3-8 | 5.161 | 3-8 | 3.791 | 3-8 | 2.996 |
| 1-2 | 18.182 | 1-2 | 8.000 | 1-2 | 5.128 | 1-2 | 3.774 | 1-2 | 2.985 |
| 5-8 | 17.778 | 5-8 | 7.921 | 5-8 | 5.096 | 5-8 | 3.756 | 5-8 | 2.974 |
| 3-4 | 17.391 | 3-4 | 7.843 | 3-4 | 5.063 | 3-4 | 3.738 | 3-4 | 2.963 |
| 7-8 | 17.021 | 7-8 | 7.767 | 7-8 | 5.031 | 7-8 | 3.721 | 7-8 | 2.952 |
| 6 | 16.667 | 13 | 7.692 | 20 | 5.000 | 27 | 3.704 | 34 | 2.941 |
| 1-8 | 16.327 | 1-8 | 7.619 | 1-8 | 4.969 | 1-8 | 3.687 | 1-8 | 2.930 |
| 1-4 | 16.000 | 1-4 | 7.547 | 1-4 | 4.938 | 1-4 | 3.670 | 1-4 | 2.920 |
| 3-8 | 15.686 | 3-8 | 7.477 | 3-8 | 4.908 | 3-8 | 3.653 | 3-8 | 2.909 |
| 1-2 | 15.385 | 1-2 | 7.407 | 1-2 | 4.878 | 1-2 | 3.636 | 1-2 | 2.899 |
| 5-8 | 15.094 | 5-8 | 7.339 | 5-8 | 4.848 | 5-8 | 3.620 | 5-8 | 2.888 |
| 3-4 | 14.815 | 3-4 | 7.273 | 3-4 | 4.819 | 3-4 | 3.604 | 3-4 | 2 878 |
| 7-8 | 14.545 | 7-8 | 7.207 | 7-8 | 4.790 | 7-8 | 3.587 | 7-8 | 2.867 |

# TABLE V.—Showing Universal Profits per Cent.

| Prices. | Profit ℘ Cent. | Prices. | Profit ℘ Cent. | Prices. | Profit ℘ Cent. | Prices. | Profit ℘ Cent. | Prices. | Profit ℘ Cent. |
|---|---|---|---|---|---|---|---|---|---|
| **35** | 2.857 | **42** | 2.381 | **49** | 2.041 | **56** | 1.786 | **63** | 1.587 |
| 1-8 | 2.847 | 1-8 | 2.374 | 1-8 | 2.036 | 1-8 | 1.782 | 1-8 | 1.584 |
| 1-4 | 2.837 | 1-4 | 2.367 | 1-4 | 2.030 | 1-4 | 1.778 | 1-4 | 1.581 |
| 3-8 | 2.827 | 3-8 | 2.360 | 3-8 | 2.025 | 3-8 | 1.774 | 3-8 | 1.578 |
| 1-2 | 2.817 | 1-2 | 2.353 | 1-2 | 2.020 | 1-2 | 1.770 | 1-2 | 1.575 |
| 5-8 | 2.807 | 5-8 | 2.346 | 5-8 | 2.015 | 5-8 | 1.766 | 5-8 | 1.572 |
| 3-4 | 2.797 | 3-4 | 2.339 | 3-4 | 2.010 | 3-4 | 1.762 | 3-4 | 1.569 |
| 7-8 | 2.787 | 7-8 | 2.332 | 7-8 | 2.005 | 7-8 | 1.758 | 7-8 | 1.566 |
| **36** | 2.778 | **43** | 2.326 | **50** | 2.000 | **57** | 1.754 | **64** | 1.563 |
| 1-8 | 2.768 | 1-8 | 2.319 | 1-8 | 1.995 | 1-8 | 1.751 | 1-8 | 1.559 |
| 1-4 | 2.759 | 1-4 | 2.312 | 1-4 | 1.990 | 1-4 | 1.747 | 1-4 | 1.556 |
| 3-8 | 2.749 | 3-8 | 2.305 | 3-8 | 1.985 | 3-8 | 1.743 | 3-8 | 1.553 |
| 1-2 | 2.740 | 1-2 | 2.299 | 1-2 | 1.980 | 1-2 | 1.739 | 1-2 | 1.550 |
| 5-8 | 2.730 | 5-8 | 2.292 | 5-8 | 1.975 | 5-8 | 1.735 | 5-8 | 1.547 |
| 3-4 | 2.721 | 3-4 | 2.286 | 3-4 | 1.970 | 3-4 | 1.732 | 3-4 | 1.544 |
| 7-8 | 2.712 | 7-8 | 2.279 | 7-8 | 1.966 | 7-8 | 1.728 | 7-8 | 1.541 |
| **37** | 2.703 | **44** | 2.273 | **51** | 1.961 | **58** | 1.724 | **65** | 1.538 |
| 1-8 | 2.694 | 1-8 | 2.266 | 1-8 | 1.956 | 1-8 | 1.720 | 1-8 | 1.536 |
| 1-4 | 2.685 | 1-4 | 2.260 | 1-4 | 1.951 | 1-4 | 1.717 | 1-4 | 1.533 |
| 3-8 | 2.676 | 3-8 | 2.254 | 3-8 | 1.946 | 3-8 | 1.713 | 3-8 | 1.530 |
| 1-2 | 2.667 | 1-2 | 2.247 | 1-2 | 1.942 | 1-2 | 1.709 | 1-2 | 1.527 |
| 5-8 | 2.658 | 5-8 | 2.241 | 5-8 | 1.937 | 5-8 | 1.706 | 5-8 | 1.524 |
| 3-4 | 2.649 | 3-4 | 2.235 | 3-4 | 1.932 | 3-4 | 1.702 | 3-4 | 1.521 |
| 7-8 | 2.640 | 7-8 | 2.228 | 7-8 | 1.928 | 7-8 | 1.699 | 7-8 | 1.518 |
| **38** | 2.632 | **45** | 2.222 | **52** | 1.923 | **59** | 1.695 | **66** | 1.515 |
| 1-8 | 2.623 | 1-8 | 2.216 | 1-8 | 1.918 | 1-8 | 1.691 | 1-8 | 1.512 |
| 1-4 | 2.614 | 1-4 | 2.210 | 1-4 | 1.914 | 1-4 | 1.688 | 1-4 | 1.509 |
| 3-8 | 2.606 | 3-8 | 2.204 | 3-8 | 1.909 | 3-8 | 1.684 | 3-8 | 1.507 |
| 1-2 | 2.597 | 1-2 | 2.198 | 1-2 | 1.905 | 1-2 | 1.681 | 1-2 | 1.504 |
| 5-8 | 2.589 | 5-8 | 2.192 | 5-8 | 1.900 | 5-8 | 1.677 | 5-8 | 1.501 |
| 3-4 | 2.581 | 3-4 | 2.186 | 3-4 | 1.896 | 3-4 | 1.674 | 3-4 | 1.498 |
| 7-8 | 2.572 | 7-8 | 2.180 | 7-8 | 1.891 | 7-8 | 1.670 | 7-8 | 1.495 |
| **39** | 2.564 | **46** | 2.174 | **53** | 1.887 | **60** | 1.667 | **67** | 1.493 |
| 1-8 | 2.556 | 1-8 | 2.168 | 1-8 | 1.882 | 1-8 | 1.663 | 1-8 | 1.490 |
| 1-4 | 2.548 | 1-4 | 2.162 | 1-4 | 1.878 | 1-4 | 1.660 | 1-4 | 1.487 |
| 3-8 | 2.540 | 3-8 | 2.156 | 3-8 | 1.874 | 3-8 | 1.656 | 3-8 | 1.484 |
| 1-2 | 2.532 | 1-2 | 2.151 | 1-2 | 1.869 | 1-2 | 1.653 | 1-2 | 1.481 |
| 5-8 | 2.524 | 5-8 | 2.145 | 5-8 | 1.865 | 5-8 | 1.649 | 5-8 | 1.479 |
| 3-4 | 2.516 | 3-4 | 2.139 | 3-4 | 1.860 | 3-4 | 1.646 | 3-4 | 1.476 |
| 7-8 | 2.508 | 7-8 | 2.133 | 7-8 | 1.856 | 7-8 | 1.643 | 7-8 | 1.473 |
| **40** | 2.500 | **47** | 2.128 | **54** | 1.852 | **61** | 1.639 | **68** | 1.471 |
| 1-8 | 2.492 | 1-8 | 2.122 | 1-8 | 1.848 | 1-8 | 1.636 | 1-8 | 1.468 |
| 1-4 | 2.484 | 1-4 | 2.116 | 1-4 | 1.843 | 1-4 | 1.633 | 1-4 | 1.465 |
| 3-8 | 2.477 | 3-8 | 2.111 | 3-8 | 1.839 | 3-8 | 1.629 | 3-8 | 1.463 |
| 1-2 | 2.469 | 1-2 | 2.105 | 1-2 | 1.835 | 1-2 | 1.626 | 1-2 | 1.460 |
| 5-8 | 2.462 | 5-8 | 2.100 | 5-8 | 1.831 | 5-8 | 1.623 | 5-8 | 1.457 |
| 3-4 | 2.454 | 3-4 | 2.094 | 3-4 | 1.826 | 3-4 | 1.619 | 3-4 | 1.455 |
| 7-8 | 2.446 | 7-8 | 2.089 | 7-8 | 1.822 | 7-8 | 1.616 | 7-8 | 1.452 |
| **41** | 2.439 | **48** | 2.083 | **55** | 1.818 | **62** | 1.613 | **69** | 1.449 |
| 1-8 | 2.432 | 1-8 | 2.078 | 1-8 | 1.814 | 1-8 | 1.610 | 1-8 | 1.447 |
| 1-4 | 2.424 | 1-4 | 2.073 | 1-4 | 1.810 | 1-4 | 1.606 | 1-4 | 1.444 |
| 3-8 | 2.417 | 3-8 | 2.067 | 3-8 | 1.806 | 3-8 | 1.603 | 3-8 | 1.441 |
| 1-2 | 2.410 | 1-2 | 2.062 | 1-2 | 1.802 | 1-2 | 1.600 | 1-2 | 1.439 |
| 5-8 | 2.402 | 5-8 | 2.057 | 5-8 | 1.798 | 5-8 | 1.597 | 5-8 | 1.436 |
| 3-4 | 2.395 | 3-4 | 2.051 | 3-4 | 1.794 | 3-4 | 1.594 | 3-4 | 1.434 |
| 7-8 | 2.388 | 7-8 | 2.046 | 7-8 | 1.790 | 7-8 | 1.590 | 7-8 | 1.431 |

## TABLE V.—Showing Universal Profits per Cent.

| Prices. | Profit ℘ Cent. | Prices. | Profit ℘ Cent. | Prices. | Profit ℘ Cent. | Prices. | Profit ℘ Cent. | Prices. | Profit ℘ Cent. |
|---|---|---|---|---|---|---|---|---|---|
| 70 | 1.429 | 77 | 1.299 | 84 | 1.190 | 91 | 1.099 | 98 | 1.020 |
| 1-8 | 1.426 | 1-8 | 1.297 | 1-8 | 1.189 | 1-8 | 1.097 | 1-8 | 1.019 |
| 1-4 | 1.423 | 1-4 | 1.294 | 1-4 | 1.187 | 1-4 | 1.096 | 1-4 | 1.018 |
| 3-8 | 1.421 | 3-8 | 1.292 | 3-8 | 1.185 | 3-8 | 1.094 | 3-8 | 1.017 |
| 1-2 | 1.418 | 1-2 | 1.290 | 1-2 | 1.183 | 1-2 | 1.093 | 1-2 | 1.015 |
| 5-8 | 1.416 | 5-8 | 1.288 | 5-8 | 1.182 | 5-8 | 1.091 | 5-8 | 1.014 |
| 3-4 | 1.413 | 3-4 | 1.286 | 3-4 | 1.180 | 3-4 | 1.090 | 3-4 | 1.013 |
| 7-8 | 1.411 | 7-8 | 1.284 | 7-8 | 1.178 | 7-8 | 1.088 | 7-8 | 1.011 |
| 71 | 1.408 | 78 | 1.282 | 85 | 1.176 | 92 | 1.087 | 99 | 1.010 |
| 1-8 | 1.406 | 1.8 | 1.280 | 1-8 | 1.175 | 1-8 | 1.085 | 1-8 | 1.009 |
| 1-4 | 1.404 | 1-4 | 1.278 | 1-4 | 1.173 | 1-4 | 1.084 | 1-4 | 1.008 |
| 3-8 | 1.401 | 3-8 | 1.276 | 3-8 | 1.171 | 3-8 | 1.083 | 3-8 | 1.006 |
| 1-2 | 1.399 | 1-2 | 1.274 | 1-2 | 1.170 | 1-2 | 1.081 | 1-2 | 1.005 |
| 5-8 | 1.396 | 5-8 | 1.272 | 5-8 | 1.168 | 5-8 | 1.080 | 5-8 | 1.004 |
| 3-4 | 1.394 | 3-4 | 1.270 | 3-4 | 1.166 | 3-4 | 1.078 | 3-4 | 1.003 |
| 7-8 | 1.391 | 7-8 | 1.268 | 7-8 | 1.164 | 7-8 | 1.077 | 7-8 | 1.001 |
| 72 | 1.389 | 79 | 1.266 | 86 | 1.163 | 93 | 1.075 | 100 | 1.000 |
| 1-8 | 1.386 | 1-8 | 1.264 | 1-8 | 1.161 | 1-8 | 1.074 | 101 - | -.990 |
| 1-4 | 1.384 | 1-4 | 1.262 | 1-4 | 1.159 | 1-4 | 1.072 | 102 - | -.980 |
| 3-8 | 1.382 | 3-8 | 1.260 | 3-8 | 1.158 | 3-8 | 1.071 | 103 - | -.971 |
| 1-2 | 1.379 | 1-2 | 1.258 | 1-2 | 1.156 | 1-2 | 1.070 | 104 - | -.962 |
| 5-8 | 1.377 | 5-8 | 1.256 | 5-8 | 1.154 | 5-8 | 1.068 | 105 - | -.952 |
| 3-4 | 1.375 | 3-4 | 1.254 | 3-4 | 1.153 | 3-4 | 1.067 | 106 - | -.943 |
| 7-8 | 1.372 | 7-8 | 1.252 | 7-8 | 1.151 | 7-8 | 1.065 | 107 - | -.935 |
| 73 | 1.370 | 80 | 1.250 | 87 | 1.149 | 94 | 1.064 | 108 - | -.926 |
| 1-8 | 1.368 | 1-8 | 1.248 | 1-8 | 1.148 | 1-8 | 1.062 | 109 - | -.917 |
| 1-4 | 1.365 | 1-4 | 1.246 | 1-4 | 1.146 | 1-4 | 1.061 | 110 - | -.909 |
| 3-8 | 1.363 | 3-8 | 1.244 | 3-8 | 1.144 | 3-8 | 1.060 | 111 - | -.901 |
| 1-2 | 1.361 | 1-2 | 1.242 | 1-2 | 1.143 | 1-2 | 1.058 | 112 - | -.893 |
| 5-8 | 1.358 | 5-8 | 1.240 | 5-8 | 1.141 | 5-8 | 1.057 | 113 - | -.885 |
| 3-4 | 1.356 | 3-4 | 1.238 | 3-4 | 1.140 | 3-4 | 1.055 | 114 - | -.877 |
| 7-8 | 1.354 | 7-8 | 1.236 | 7-8 | 1.138 | 7-8 | 1.054 | 115 - | -.870 |
| 74 | 1.351 | 81 | 1.235 | 88 | 1.136 | 95 | 1.053 | 116 - | -.862 |
| 1-8 | 1.349 | 1-8 | 1.233 | 1-8 | 1.135 | 1-8 | 1.051 | 117 - | -.855 |
| 1-4 | 1.347 | 1-4 | 1.231 | 1-4 | 1.133 | 1-4 | 1.050 | 118 - | -.847 |
| 3-8 | 1.345 | 3-8 | 1.229 | 3-8 | 1.132 | 3-8 | 1.048 | 119 - | -.840 |
| 1-2 | 1.342 | 1-2 | 1.227 | 1-2 | 1.130 | 1-2 | 1.047 | 120 - | -.833 |
| 5-8 | 1.340 | 5-8 | 1.225 | 5-8 | 1.128 | 5-8 | 1.046 | 121 - | -.826 |
| 3-4 | 1.338 | 3-4 | 1.223 | 3-4 | 1.127 | 3-4 | 1.044 | 122 - | -.820 |
| 7-8 | 1.336 | 7-8 | 1.221 | 7-8 | 1.125 | 7-8 | 1.043 | 123 - | -.813 |
| 75 | 1.333 | 82 | 1.220 | 89 | 1.124 | 96 | 1.042 | 124 - | -.806 |
| 1-8 | 1.331 | 1-8 | 1.218 | 1-8 | 1.122 | 1-8 | 1.040 | 125 - | -.800 |
| 1-4 | 1.329 | 1-4 | 1.216 | 1-4 | 1.120 | 1-4 | 1.039 | 126 - | -.794 |
| 3-8 | 1.327 | 3-8 | 1.214 | 3-8 | 1.119 | 3-8 | 1.038 | 127 - | -.787 |
| 1-2 | 1.325 | 1-2 | 1.212 | 1-2 | 1.117 | 1-2 | 1.036 | 128 - | -.781 |
| 5-8 | 1.322 | 5-8 | 1.210 | 5-8 | 1.116 | 5-8 | 1.035 | 129 - | -.775 |
| 3-4 | 1.320 | 3-4 | 1.208 | 3-4 | 1.114 | 3-4 | 1.034 | 130 - | -.769 |
| 7-8 | 1.318 | 7-8 | 1.207 | 7-8 | 1.113 | 7-8 | 1.032 | 131 - | -.763 |
| 76 | 1.316 | 83 | 1.205 | 90 | 1.111 | 97 | 1.031 | 132 - | -.758 |
| 1-8 | 1.314 | 1-8 | 1.203 | 1-8 | 1.110 | 1-8 | 1.030 | 133 - | -.752 |
| 1-4 | 1.311 | 1-4 | 1.201 | 1-4 | 1.108 | 1-4 | 1.028 | 134 - | -.746 |
| 3-8 | 1.309 | 3-8 | 1.199 | 3-8 | 1.107 | 3-8 | 1.027 | 135 - | -.741 |
| 1-2 | 1.307 | 1-2 | 1.198 | 1-2 | 1.105 | 1-2 | 1.026 | 136 - | -.735 |
| 5-8 | 1.305 | 5-8 | 1 196 | 5-8 | 1.103 | 5-8 | 1.024 | 137 - | -.730 |
| 3-4 | 1.303 | 3-4 | 1.194 | 3-4 | 1.102 | 3-4 | 1.023 | 138 - | -.725 |
| 7-8 | 1.301 | 7-8 | 1.192 | 7-8 | 1.100 | 7-8 | 1.022 | 150 - | -.667 |

**TABLE VI.—Showing the Per Centage of Marine and other Insurances, in Sterling, Decimals of the £, and equivalents in Tenpennies, with proportionate rates per Tenpennies.**

| Sterling. | | Decimals of the £. | Equivalents in Tenp. | | Tenpennies. | | | Sterling. | | Decimals of the £. | Equivalents in Tenp. | | Tenpennies. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | ₩ Cent. | | 1 to 1000 Tenp. | | | | | | ₩ Cent. | | 1 to 1000 Tenp. |
| S. | D. | £ | Tenp. | Ces. | Tenp. | | Tenp. | S. | D. | £ | Tenp. | Ces. | Tenp. | | Tenp |
| 1 | 0 | -.0500 | 1 | 20 | - | 1-2 | -.00500 | 24 | 0 | 1·2000 | 28 | 80 | 12 | - | -.12000 |
| 1 | 3 | -.0625 | 1 | 50 | - | 5-8 | -.00625 | 25 | 0 | 1.2500 | 30 | - | 12 | 1-2 | -.12500 |
| 1 | 6 | -.0750 | 1 | 80 | - | 3-4 | -.00750 | 26 | 0 | 1.3000 | 31 | 20 | 13 | - | -.13000 |
| 1 | 9 | -.0875 | 2 | 10 | - | 7-8 | -.00875 | 27 | 0 | 1.3500 | 32 | 40 | 13 | 1-2 | -.13500 |
| 2 | 0 | -.1000 | 2 | 40 | 1 | - | -.01000 | 28 | 0 | 1.4000 | 33 | 60 | 14 | - | -.14000 |
| 2 | 3 | -.1125 | 2 | 70 | 1 | 1-8 | -.01125 | 29 | 0 | 1.4500 | 34 | 80 | 14 | 1-2 | -.14500 |
| 2 | 6 | -.1250 | 3 | - | 1 | 1-4 | -.01250 | 30 | 0 | 1.5000 | 36 | - | 15 | - | -.15000 |
| 2 | 9 | -.1375 | 3 | 30 | 1 | 3-8 | -.01375 | 31 | 0 | 1.5500 | 37 | 20 | 15 | 1-2 | -.15500 |
| 3 | 0 | -.1500 | 3 | 60 | 1 | 1-2 | -.01500 | 32 | 0 | 1.6000 | 38 | 40 | 16 | - | -.16000 |
| 3 | 3 | -.1625 | 3 | 90 | 1 | 5-8 | -.01625 | 33 | 0 | 1.6500 | 39 | 60 | 16 | 1-2 | -.16500 |
| 3 | 6 | -.1750 | 4 | 20 | 1 | 3-4 | -.01750 | 34 | 0 | 1.7000 | 40 | 80 | 17 | - | -.17000 |
| 3 | 9 | -.1875 | 4 | 50 | 1 | 7-8 | -.01875 | 35 | 0 | 1.7500 | 42 | - | 17 | 1-2 | -.17500 |
| 4 | 0 | -.2000 | 4 | 80 | 2 | - | -.02000 | 36 | 0 | 1.8000 | 43 | 20 | 18 | - | -.18000 |
| 4 | 3 | -.2125 | 5 | 10 | 2 | 1-8 | -.02125 | 37 | 0 | 1.8500 | 44 | 40 | 18 | 1-2 | -.18500 |
| 4 | 6 | -.2250 | 5 | 40 | 2 | 1-4 | -.02250 | 38 | 0 | 1.9000 | 45 | 60 | 19 | - | -.19000 |
| 4 | 9 | -.2375 | 5 | 70 | 2 | 3-8 | -.02375 | 39 | 0 | 1.9500 | 46 | 80 | 19 | 1-2 | -.19500 |
| 5 | 0 | -.2500 | 6 | - | 2 | 1-2 | -.02500 | 40 | 0 | 2.0000 | 48 | - | 20 | - | -.20000 |
| 5 | 3 | -.2625 | 6 | 30 | 2 | 5-8 | -.02625 | 42 | 0 | 2.1000 | 50 | 40 | 21 | - | -.21000 |
| 5 | 6 | -.2750 | 6 | 60 | 2 | 3-4 | -.02750 | 44 | 0 | 2.2000 | 52 | 80 | 22 | - | -.22000 |
| 5 | 9 | -.2875 | 6 | 90 | 2 | 7-8 | -.02875 | 46 | 0 | 2.3000 | 55 | 20 | 23 | - | -.23000 |
| 6 | 0 | -.3000 | 7 | 20 | 3 | - | -.03000 | 48 | 0 | 2.4000 | 57 | 60 | 24 | - | -.24000 |
| 6 | 3 | -.3125 | 7 | 50 | 3 | 1-8 | -.03125 | 50 | 0 | 2.5000 | 60 | - | 25 | - | -.25000 |
| 6 | 6 | -.3250 | 7 | 80 | 3 | 1-4 | -.03250 | 52 | 0 | 2.6000 | 62 | 40 | 26 | - | -.26000 |
| 6 | 9 | -.3375 | 8 | 10 | 3 | 3-8 | -.03375 | 54 | 0 | 2.7000 | 64 | 80 | 27 | - | -.27000 |
| 7 | 0 | -.3500 | 8 | 40 | 3 | 1-2 | -.03500 | 56 | 0 | 2.8000 | 67 | 20 | 28 | - | -.28000 |
| 7 | 3 | -.3625 | 8 | 70 | 3 | 5-8 | -.03625 | 58 | 0 | 2.9000 | 69 | 60 | 29 | - | -.29000 |
| 7 | 6 | -.3750 | 9 | - | 3 | 3-4 | -.03750 | 60 | 0 | 3.0000 | 72 | - | 30 | - | -.30000 |
| 7 | 9 | -.3875 | 9 | 30 | 3 | 7-8 | -.03875 | 63 | 0 | 3.1500 | 75 | 60 | 31 | 1-2 | -.31500 |
| 8 | 0 | -.4000 | 9 | 60 | 4 | - | -.04000 | 66 | 0 | 3.3000 | 79 | 20 | 33 | - | -.33000 |
| 8 | 3 | -.4125 | 9 | 90 | 4 | 1-8 | -.04125 | 69 | 0 | 3.4500 | 82 | 80 | 34 | 1-2 | -.34500 |
| 8 | 6 | -.4250 | 10 | 20 | 4 | 1-4 | -.04250 | 70 | 0 | 3.5000 | 84 | - | 35 | - | -.35000 |
| 8 | 9 | -.4375 | 10 | 50 | 4 | 3-8 | -.04375 | 73 | 0 | 3.6500 | 87 | 60 | 36 | 1-2 | -.36500 |
| 9 | 0 | -.4500 | 10 | 80 | 4 | 1-2 | -.04500 | 76 | 0 | 3.8000 | 91 | 20 | 38 | - | -.38000 |
| 9 | 3 | -.4625 | 11 | 10 | 4 | 5-8 | -.04625 | 79 | 0 | 3.9500 | 94 | 80 | 39 | 1-2 | -.39500 |
| 9 | 6 | -.4750 | 11 | 40 | 4 | 3-4 | -.04750 | 80 | 0 | 4.0000 | 96 | - | 40 | - | -.40000 |
| 9 | 9 | -.4875 | 11 | 70 | 4 | 7-8 | -.04875 | 84 | 0 | 4.2000 | 100 | 80 | 42 | - | -.42000 |
| 10 | 0 | -.5000 | 12 | - | 5 | - | -.05000 | 88 | 0 | 4.4000 | 105 | 60 | 44 | - | -.44000 |
| 10 | 6 | -.5250 | 12 | 60 | 5 | 1-4 | -.05250 | 92 | 0 | 4.6000 | 110 | 40 | 46 | - | -.46000 |
| 11 | 0 | -.5500 | 13 | 20 | 5 | 1-2 | -.05500 | 96 | 0 | 4.8000 | 115 | 20 | 48 | - | -.48000 |
| 11 | 6 | -.5750 | 13 | 80 | 5 | 3-4 | -.05750 | 100 | 0 | 5.0000 | 120 | - | 50 | - | -.50000 |
| 12 | 0 | -.6000 | 14 | 40 | 6 | - | -.06000 | 105 | 0 | 5.2500 | 126 | - | 52 | 1-2 | -.52500 |
| 12 | 6 | -.6250 | 15 | - | 6 | 1-4 | -.06250 | 110 | 0 | 5.5000 | 132 | - | 55 | - | -.55000 |
| 13 | 0 | -.6500 | 15 | 60 | 6 | 1-2 | -.06500 | 115 | 0 | 5.7500 | 138 | - | 57 | 1-2 | -.57500 |
| 13 | 6 | -.6750 | 16 | 20 | 6 | 3-4 | -.06750 | 120 | 0 | 6.0000 | 144 | - | 60 | - | -.60000 |
| 14 | 0 | -.7000 | 16 | 80 | 7 | - | -.07000 | 125 | 0 | 6.2500 | 150 | - | 62 | 1-2 | -.62500 |
| 14 | 6 | -.7250 | 17 | 40 | 7 | 1-4 | -.07250 | 130 | 0 | 6.5000 | 156 | - | 65 | - | -.65000 |
| 15 | 0 | -.7500 | 18 | - | 7 | 1-2 | -.07500 | 135 | 0 | 6.7500 | 162 | - | 67 | 1-2 | -.67500 |
| 15 | 6 | -.7750 | 18 | 60 | 7 | 3-4 | -.07750 | 140 | 0 | 7.0000 | 168 | - | 70 | - | -.70000 |
| 16 | 0 | -.8000 | 19 | 20 | 8 | - | -.08000 | 145 | 0 | 7.2500 | 174 | - | 72 | 1-2 | -.72500 |
| 16 | 6 | -.8250 | 19 | 80 | 8 | 1-4 | -.08250 | 150 | 0 | 7.5000 | 180 | - | 75 | - | -.75000 |
| 17 | 0 | -.8500 | 20 | 40 | 8 | 1-2 | -.08500 | 155 | 0 | 7.7500 | 186 | - | 77 | 1-2 | -.77500 |
| 17 | 6 | -.8750 | 21 | - | 8 | 3-4 | -.08750 | 160 | 0 | 8.0000 | 192 | - | 80 | - | -.80000 |
| 18 | 0 | -.9000 | 21 | 60 | 9 | - | -.09000 | 165 | 0 | 8.2500 | 198 | - | 82 | 1-2 | -.82500 |
| 18 | 6 | -.9250 | 22 | 20 | 9 | 1-4 | -.09250 | 170 | 0 | 8.5000 | 204 | - | 85 | - | -.85000 |
| 19 | 0 | -.9500 | 22 | 80 | 9 | 1-2 | -.09500 | 175 | 0 | 8.7500 | 210 | - | 87 | 1-2 | -.87500 |
| 19 | 6 | -.9750 | 23 | 40 | 9 | 3-4 | -.09750 | 180 | 0 | 9.0000 | 216 | - | 90 | - | -.90000 |
| 20 | 0 | 1.0000 | 24 | - | 10 | - | -.10000 | 185 | 0 | 9.2500 | 222 | - | 92 | 1-2 | -.92500 |
| 21 | 0 | 1.5000 | 25 | 20 | 10 | 1-2 | -.10500 | 190 | 0 | 9.5000 | 228 | - | 95 | - | -.95000 |
| 22 | 0 | 1.1000 | 26 | 40 | 11 | - | -.11000 | 195 | 0 | 9.7500 | 234 | - | 97 | 1-2 | -.97500 |
| 23 | 0 | 1.1500 | 27 | 60 | 11 | 1-2 | -.11500 | 200 | 0 | 10.0000 | 240 | - | 100 | - | 1.00000 |

### FRANCE, BELGIUM, GENOA, & GENEVA.

25.22½ Francs ⅌ £. 9½ Pence ⅌ Franc.

VALUE OF BRITISH COINS IN FRANCS.

| | | FRANCS. | | | FRANCS. |
|---|---|---|---|---|---|
| **Farthings** | 1 | .03 | **Pounds** | 1 | 25.23 |
| | 2 | .05 | | 2 | 50.45 |
| | 3 | .08 | | 3 | 75.68 |
| **Pence** | 1 | .11 | | 4 | 100.90 |
| | 2 | .21 | | 5 | 126.13 |
| | 3 | .32 | | 6 | 151.35 |
| | 4 | .42 | | 7 | 176.58 |
| | 5 | .53 | | 8 | 201.80 |
| | 6 | .63 | | 9 | 227.03 |
| | 7 | .74 | | 10 | 252.25 |
| | 8 | .84 | | 20 | 504.50 |
| | 9 | .95 | | 30 | 756.75 |
| | 10 | 1.05 | | 40 | 1009.00 |
| | 11 | 1.16 | | 50 | 1261.25 |
| **Shillings** | 1 | 1.26 | | 60 | 1513.50 |
| | 2 | 2.52 | | 70 | 1765.75 |
| | 3 | 3.78 | | 80 | 2018.00 |
| | 4 | 5.05 | | 90 | 2270.25 |
| | 5 | 6.31 | | 100 | 2522.50 |
| | 6 | 7.57 | | | |
| | 7 | 8.83 | | | |
| | 8 | 10.09 | | | |
| | 9 | 11.35 | | | |
| | 10 | 12.61 | | | |
| | 11 | 13.87 | | | |
| | 12 | 15.13 | | | |
| | 13 | 16.40 | | | |
| | 14 | 17.66 | | | |
| | 15 | 18.92 | | | |
| | 16 | 20.18 | | | |
| | 17 | 21.44 | | | |
| | 18 | 22.70 | | | |
| | 19 | 23.96 | | | |

FRENCH COINS.

100 Centimes, 1 Franc.
1 Franc..£.039643211
1 Cme .. .00039
1 Million F. £39,643 4 2¾

| | | | S. | D. | F. |
|---|---|---|---|---|---|
| Silver, | ¼ | Franc | — | 2 | 3 |
| | ½ | ,, | — | 4 | 3 |
| | 1 | ,,1809 | — | 9 | 3 |
| | 2 | ,,1808 | 1 | 7 | 2 |
| | 5 | ,, | 4 | 0 | 1 |
| Gold, | 10 | ,, | 7 | 11 | 1 |
| | 20 | ,, | 15 | 10 | 2 |
| | 40 | ,, | 31 | 8 | 1 |

### GREECE.

28.12½ Drachmi ⅌ £. 8¾ pence ⅌ Dr.

VALUE OF BRITISH COINS IN DRACHMI.

| | | DRACHMI. | | | DRACHMI |
|---|---|---|---|---|---|
| **Farthings** | 1 | .03 | **Pounds** | 1 | 28.13 |
| | 2 | .06 | | 2 | 56.25 |
| | 3 | .09 | | 3 | 84.38 |
| **Pence** | 1 | .12 | | 4 | 112.50 |
| | 2 | .23 | | 5 | 140.63 |
| | 3 | .35 | | 6 | 168.75 |
| | 4 | .47 | | 7 | 196.88 |
| | 5 | .59 | | 8 | 225.00 |
| | 6 | .70 | | 9 | 253.13 |
| | 7 | .82 | | 10 | 281.25 |
| | 8 | .94 | | 20 | 562.50 |
| | 9 | 1.05 | | 30 | 843.75 |
| | 10 | 1.17 | | 40 | 1125.00 |
| | 11 | 1.29 | | 50 | 1406.25 |
| **Shillings** | 1 | 1.41 | | 60 | 1687.50 |
| | 2 | 2.81 | | 70 | 1968.75 |
| | 3 | 4.22 | | 80 | 2250.00 |
| | 4 | 5.63 | | 90 | 2531.25 |
| | 5 | 7.03 | | 100 | 2812.50 |
| | 6 | 8.44 | | | |
| | 7 | 9.84 | | | |
| | 8 | 11.25 | | | |
| | 9 | 12.66 | | | |
| | 10 | 14.06 | | | |
| | 11 | 15.47 | | | |
| | 12 | 16.88 | | | |
| | 13 | 18.28 | | | |
| | 14 | 19.69 | | | |
| | 15 | 21.09 | | | |
| | 16 | 22.50 | | | |
| | 17 | 23.91 | | | |
| | 18 | 25.31 | | | |
| | 19 | 26.72 | | | |

GRECIAN COINS.

100 Lepta—1 Drachme
1 Drachme £.0355555555
1 Lepta .00035
1 Million Dr. £35,555 11 1½

| | S. | D. | F. |
|---|---|---|---|
| Silver, 5 Drachmi | 3 | 6 | 0 |
| 10 ,, | 7 | 0 | 0 |
| Gold, 20 ,, | 14 | 2 | 2 |

### LOMBARDO VENETO. (Milan and Venice.)

29.50 Lire ⅌ £. 8¼ pence ⅌ Lira.

VALUE OF BRITISH COINS IN LIRE.

| | | LIRE. | | | LIRE. |
|---|---|---|---|---|---|
| **Farthings** | 1 | .03 | **Pounds** | 1 | 29.50 |
| | 2 | .06 | | 2 | 59.00 |
| | 3 | .09 | | 3 | 88.50 |
| **Pence** | 1 | .12 | | 4 | 118.00 |
| | 2 | .25 | | 5 | 147.50 |
| | 3 | .37 | | 6 | 177.00 |
| | 4 | .49 | | 7 | 206.50 |
| | 5 | .61 | | 8 | 236.00 |
| | 6 | .74 | | 9 | 265.50 |
| | 7 | .86 | | 10 | 295.00 |
| | 8 | .98 | | 20 | 590.00 |
| | 9 | 1.11 | | 30 | 885.00 |
| | 10 | 1.23 | | 40 | 1180.00 |
| | 11 | 1.35 | | 50 | 1475.00 |
| **Shillings** | 1 | 1.48 | | 60 | 1770.00 |
| | 2 | 2.95 | | 70 | 2065.00 |
| | 3 | 4.43 | | 80 | 2360.00 |
| | 4 | 5.90 | | 90 | 2655.00 |
| | 5 | 7.38 | | 100 | 2950.00 |
| | 6 | 8.85 | | | |
| | 7 | 10.33 | | | |
| | 8 | 11.80 | | | |
| | 9 | 13.28 | | | |
| | 10 | 14.75 | | | |
| | 11 | 16.23 | | | |
| | 12 | 17.70 | | | |
| | 13 | 19.18 | | | |
| | 14 | 20.65 | | | |
| | 15 | 22.13 | | | |
| | 16 | 23.60 | | | |
| | 17 | 25.08 | | | |
| | 18 | 26.55 | | | |
| | 19 | 28.03 | | | |

LOMBARDO VENETO COINS.

100 Centisimi—1 Lira
1 Lira £.033898305
1 Cmi. .00033
1 Million L. £33,898 6 1¼

| | S. | D. | F. |
|---|---|---|---|
| Silver, Lira, new | — | 7 | 1 |
| 3 Lire .... | 1 | 10 | 1 |
| 6 ,, | 3 | 3 | 2 |
| 10 Scudo, 1797 | 4 | 3 | 0 |
| Gold, Sequin.. | 9 | 5 | 0 |
| Pistole.. | 15 | 7 | 3 |
| 40 Lire, 1808 | 31 | 9 | 3 |

### TUSCANY. (Florence and Leghorn.)

30.70 Lire ⅌ £. 8 pence ⅌ Lira.

VALUE OF BRITISH COINS IN LIRE.

| | | LIRE. | | | LIRE. |
|---|---|---|---|---|---|
| **Farthings** | 1 | .03 | **Pounds** | 1 | 30.70 |
| | 2 | .06 | | 2 | 61.40 |
| | 3 | .10 | | 3 | 92.10 |
| **Pence** | 1 | .13 | | 4 | 122.80 |
| | 2 | .26 | | 5 | 153.50 |
| | 3 | .38 | | 6 | 184.20 |
| | 4 | .51 | | 7 | 214.90 |
| | 5 | .64 | | 8 | 245.60 |
| | 6 | .77 | | 9 | 276.30 |
| | 7 | .90 | | 10 | 307.00 |
| | 8 | 1.02 | | 20 | 614.00 |
| | 9 | 1.15 | | 30 | 921.00 |
| | 10 | 1.28 | | 40 | 1228.00 |
| | 11 | 1.41 | | 50 | 1535.00 |
| **Shillings** | 1 | 1.54 | | 60 | 1842.00 |
| | 2 | 3.07 | | 70 | 2149.00 |
| | 3 | 4.61 | | 80 | 2456.00 |
| | 4 | 6.14 | | 90 | 2763.00 |
| | 5 | 7.68 | | 100 | 3070.00 |
| | 6 | 9.21 | | | |
| | 7 | 10.75 | | | |
| | 8 | 12.28 | | | |
| | 9 | 13.82 | | | |
| | 10 | 15.35 | | | |
| | 11 | 16.89 | | | |
| | 12 | 18.42 | | | |
| | 13 | 19.96 | | | |
| | 14 | 21.49 | | | |
| | 15 | 23.03 | | | |
| | 16 | 24.56 | | | |
| | 17 | 26.10 | | | |
| | 18 | 27.63 | | | |
| | 19 | 29.17 | | | |

TUSCAN COINS.

100 Centisimi—1 Lira.
1 Lira £.032573290
1 Cmi. .00032
1 Million L. £32,573 5 9½

| | S. | D. | F. |
|---|---|---|---|
| Silver, Lira, 1803 | — | 7 | 2 |
| 5 Lire ,, | 3 | 4 | 2 |
| 10 Lire ,, | 6 | 8 | 3 |
| Scudo Pisa | 4 | 5 | 3 |
| Leopoldone, 1790 | 4 | 5 | 3 |
| Gold, Sequin.... | 9 | 5 | 3 |
| Raspone .. | 28 | 5 | 2 |

## HOLLAND.

12 Florins ꝑ £. 20 Pence ꝑ Florin.

VALUE OF BRITISH COINS IN FLORINS.

| | | FLORINS. |
|---|---|---|
| **Farthings** | 1 | .01 |
| | 2 | .03 |
| | 3 | .04 |
| **Pence** | 1 | .05 |
| | 2 | .10 |
| | 3 | .15 |
| | 4 | .20 |
| | 5 | .25 |
| | 6 | .30 |
| | 7 | .35 |
| | 8 | .40 |
| | 9 | .45 |
| | 10 | .50 |
| | 11 | .55 |
| **Shillings** | 1 | .60 |
| | 2 | 1.20 |
| | 3 | 1.80 |
| | 4 | 2.40 |
| | 5 | 3.00 |
| | 6 | 3.60 |
| | 7 | 4.20 |
| | 8 | 4.80 |
| | 9 | 5.40 |
| | 10 | 6.00 |
| | 11 | 6.60 |
| | 12 | 7.20 |
| | 13 | 7.80 |
| | 14 | 8.40 |
| | 15 | 9.00 |
| | 16 | 9.60 |
| | 17 | 10.20 |
| | 18 | 10.80 |
| | 19 | 11.40 |

| | | FLORINS. |
|---|---|---|
| **Pounds** | 1 | 12.00 |
| | 2 | 24.00 |
| | 3 | 36.00 |
| | 4 | 48.00 |
| | 5 | 60.00 |
| | 6 | 72.00 |
| | 7 | 84.00 |
| | 8 | 96.00 |
| | 9 | 108.00 |
| | 10 | 120.00 |
| | 20 | 240.00 |
| | 30 | 360.00 |
| | 40 | 480.00 |
| | 50 | 600.00 |
| | 60 | 720.00 |
| | 70 | 840.00 |
| | 80 | 960.00 |
| | 90 | 1080.00 |
| | 100 | 1200.00 |

DUTCH COINS.

100 Cents .... 1 Florin
1 Florin .. £.0·3333333
1 Cent .... 00083
1 Million Fl. £83,333 6 8

| | S. | D. | F. |
|---|---|---|---|
| Silver, 5 Cents | — | 1 | 0 |
| 10 „ | — | 2 | 0 |
| ¼ Florin | — | 5 | 0 |
| ½ „ | — | 10 | 1 |
| 1 „ | 1 | 8 | 3 |
| 3 „ | 5 | 2 | 1 |
| Rix Dollar | 4 | 3 | 1 |
| Ducatoon | 5 | 5 | 3 |

## RUSSIA.

37½ pence ꝑ Silver Ro. 6.40 Ro. ꝑ £.

VALUE OF BRITISH COINS IN ROUBLES.

| | | ROUBLES. |
|---|---|---|
| **Farthings** | 1 | .01 |
| | 2 | .01 |
| | 3 | .02 |
| **Pence** | 1 | .03 |
| | 2 | .05 |
| | 3 | .08 |
| | 4 | .11 |
| | 5 | .13 |
| | 6 | .16 |
| | 7 | .19 |
| | 8 | .21 |
| | 9 | .24 |
| | 10 | .27 |
| | 11 | .29 |
| **Shillings** | 1 | .32 |
| | 2 | .64 |
| | 3 | .96 |
| | 4 | 1.28 |
| | 5 | 1.60 |
| | 6 | 1.92 |
| | 7 | 2.24 |
| | 8 | 2.56 |
| | 9 | 2.88 |
| | 10 | 3.20 |
| | 11 | 3.52 |
| | 12 | 3.84 |
| | 13 | 4.16 |
| | 14 | 4.48 |
| | 15 | 4.80 |
| | 16 | 5.12 |
| | 17 | 5.44 |
| | 18 | 5.76 |
| | 19 | 6.08 |

| | | ROUBLES. |
|---|---|---|
| **Pounds.** | 1 | 6 40 |
| | 2 | 12.80 |
| | 3 | 19.20 |
| | 4 | 25.60 |
| | 5 | 32.00 |
| | 6 | 38.40 |
| | 7 | 44.80 |
| | 8 | 51.20 |
| | 9 | 57.60 |
| | 10 | 64.00 |
| | 20 | 128.00 |
| | 30 | 192.00 |
| | 40 | 256.00 |
| | 50 | 320.00 |
| | 60 | 384.00 |
| | 70 | 448.00 |
| | 80 | 512.00 |
| | 90 | 576.00 |
| | 100 | 640.00 |

RUSSIAN COINS.

100 Kopeks, 1 Rouble.
1 Ro. £.156250000
1 Ko. ·00156
1 Million Ro. £156,250 0 0

| | S. | D. | F. |
|---|---|---|---|
| Silver, 5 Ko. 1801 | — | 2 | 1 |
| 10 „ .. | — | 5 | 0 |
| 15 „ 1778 | — | 5 | 3 |
| 20 „ 1767 | — | 8 | 3 |
| ¼ Ro. Polpoltin | — | 10 | 0 |
| ½ „ Poltin | 1 | 7 | 0 |
| Rouble 1805 | 3 | 2 | 3 |
| Gold, Rouble 1799 | 3 | 0 | 1 |
| ½ Imp. 1818 | 16 | 2 | 0 |

## NAPLES.

40 pence ꝑ Ducat. 6 Ducats ꝑ £.

VALUE OF BRITISH COINS IN DUCATS.

| | | DUCATS |
|---|---|---|
| **Farthings** | 1 | .01 |
| | 2 | .01 |
| | 3 | .02 |
| **Pence** | 1 | .03 |
| | 2 | .05 |
| | 3 | .08 |
| | 4 | .10 |
| | 5 | .13 |
| | 6 | .15 |
| | 7 | .18 |
| | 8 | .20 |
| | 9 | .23 |
| | 10 | .25 |
| | 11 | .28 |
| **Shillings** | 1 | .30 |
| | 2 | .60 |
| | 3 | .90 |
| | 4 | 1.20 |
| | 5 | 1.50 |
| | 6 | 1.80 |
| | 7 | 2.10 |
| | 8 | 2.40 |
| | 9 | 2.70 |
| | 10 | 3.00 |
| | 11 | 3.30 |
| | 12 | 3.60 |
| | 13 | 3.90 |
| | 14 | 4.20 |
| | 15 | 4.50 |
| | 16 | 4.80 |
| | 17 | 5.10 |
| | 18 | 5.40 |
| | 19 | 5.70 |

| | | DUCATS. |
|---|---|---|
| **Pounds.** | 1 | 6.00 |
| | 2 | 12.00 |
| | 3 | 18.00 |
| | 4 | 24.00 |
| | 5 | 30.00 |
| | 6 | 36.00 |
| | 7 | 42.00 |
| | 8 | 48.00 |
| | 9 | 54.00 |
| | 10 | 60.00 |
| | 20 | 120.00 |
| | 30 | 180.00 |
| | 40 | 240.00 |
| | 50 | 300.00 |
| | 60 | 360.00 |
| | 70 | 420.00 |
| | 80 | 480.00 |
| | 90 | 540.00 |
| | 100 | 600.00 |

NEAPOLITAN COINS.

100 Grani—1 Ducat
1 Ducat £.166666667
1 Grani .00166
1 Million D. £166666 13 4

| | S. | D. | F |
|---|---|---|---|
| Silver, 10 Carlini | 3 | 5 | 1 |
| 12 „ | 4 | 1 | 2 |
| Ducat, old.... | 3 | 6 | 2 |
| „ new .. | 3 | 5 | 1 |
| „ 1796 .. | 4 | 1 | 2 |
| „ 1799 .. | 4 | 1 | 2 |
| „ 1805 .. | 4 | 1 | 2 |
| Gold, Sequin, 1762 | 6 | 7 | 2 |
| Oncetta, 1818 | 10 | 3 | 1 |
| Pistole, 1752 | 14 | 0 | 1 |
| 6 Ducats .... | 21 | 7 | 0 |

## ROME.

50 pence ꝑ Scudo. 4.80 Scudi ꝑ £.

VALUE OF BRITISH COINS IN SCUDI.

| | | SCUDI. |
|---|---|---|
| **Farthings** | 1 | .01 |
| | 2 | .01 |
| | 3 | .02 |
| **Pence** | 1 | .02 |
| | 2 | .04 |
| | 3 | .06 |
| | 4 | .08 |
| | 5 | .10 |
| | 6 | .12 |
| | 7 | .14 |
| | 8 | .16 |
| | 9 | .18 |
| | 10 | .20 |
| | 11 | .22 |
| **Shillings** | 1 | .24 |
| | 2 | .48 |
| | 3 | .72 |
| | 4 | .96 |
| | 5 | 1.20 |
| | 6 | 1.44 |
| | 7 | 1.68 |
| | 8 | 1.92 |
| | 9 | 2.16 |
| | 10 | 2.40 |
| | 11 | 2.64 |
| | 12 | 2.88 |
| | 13 | 3.12 |
| | 14 | 3.36 |
| | 15 | 3.60 |
| | 16 | 3.84 |
| | 17 | 4.08 |
| | 18 | 4.32 |
| | 19 | 4.56 |

| | | SCUDI. |
|---|---|---|
| **Pounds** | 1 | 4.80 |
| | 2 | 9.60 |
| | 3 | 14.40 |
| | 4 | 19.20 |
| | 5 | 24.00 |
| | 6 | 28.80 |
| | 7 | 33.60 |
| | 8 | 38.40 |
| | 9 | 43.20 |
| | 10 | 48.00 |
| | 20 | 96.00 |
| | 30 | 144.00 |
| | 40 | 192.00 |
| | 50 | 240.00 |
| | 60 | 288.00 |
| | 70 | 336.00 |
| | 80 | 384.00 |
| | 90 | 432.00 |
| | 100 | 480.00 |

ROMAN COINS.

100 Bajocchi—1 Scudo.
1 Scudo £.208333333
1 Bj. .00208
1 Million S. £208333 6 8

| | S. | D. | F. |
|---|---|---|---|
| Silver, Grosso, | — | 2 | 2 |
| Paolo | — | 5 | 1 |
| Testone | 1 | 3 | 2 |
| Scudo, 1800 | 4 | 3 | 3 |
| „ 1835 | 4 | 2 | 2 |
| Gold, Sequin since 1760 | 9 | 2 | 3 |
| Pistole, 1802 | 13 | 6 | 3 |
| Scudo Republic | 64 | 11 | 2 |
| 10 Scudi. 1835 | 42 | 7 | 3 |

## PORTUGAL.

54 pence ⅌ Milreis    4.444 Milreis ⅌ £.

VALUE OF BRITISH COINS IN MILREIS.

| | | MILREIS. | | | MILREIS. |
|---|---|---|---|---|---|
| **Farthings** | 1 | .005 | **Pounds** | 1 | 4.444 |
| | 2 | .009 | | 2 | 8.889 |
| | 3 | .014 | | 3 | 13.333 |
| **Pence** | 1 | .019 | | 4 | 17.778 |
| | 2 | .037 | | 5 | 22.222 |
| | 3 | .056 | | 6 | 26.667 |
| | 4 | .074 | | 7 | 31.111 |
| | 5 | .093 | | 8 | 35.556 |
| | 6 | .111 | | 9 | 40.000 |
| | 7 | .130 | | 10 | 44.444 |
| | 8 | .148 | | 20 | 88.889 |
| | 9 | .167 | | 30 | 133.333 |
| | 10 | .185 | | 40 | 177.778 |
| | 11 | .204 | | 50 | 222.222 |
| **Shillings** | 1 | .222 | | 60 | 266.667 |
| | 2 | .444 | | 70 | 311.111 |
| | 3 | .667 | | 80 | 355.556 |
| | 4 | .889 | | 90 | 400.000 |
| | 5 | 1.111 | | 100 | 444.444 |
| | 6 | 1.333 | | | |
| | 7 | 1.556 | | | |
| | 8 | 1.778 | | | |
| | 9 | 2.000 | | | |
| | 10 | 2.222 | | | |
| | 11 | 2.444 | | | |
| | 12 | 2.667 | | | |
| | 13 | 2.889 | | | |
| | 14 | 3.111 | | | |
| | 15 | 3.333 | | | |
| | 16 | 3.556 | | | |
| | 17 | 3.778 | | | |
| | 18 | 4.000 | | | |
| | 19 | 4.222 | | | |

PORTUGUESE COINS.

1000 Reis, 1 Milreis.
1 Milreis £.225000000
1 Reis .000225
1Million M. £225000 0 0

| | S. | D. | F. |
|---|---|---|---|
| Silver, ½ Testoon | — | 2 | 3 |
| Testoon | — | 6 | 0 |
| Crusado Novo 1802 | 2 | 4 | 0 |
| „ „ 1809 | 2 | 4 | 3 |
| Gold, Crus Novo | 2 | 7 | 2 |
| 8 Testoon | 4 | 7 | 1 |
| 12 „ .. | 6 | 6 | 0 |
| 16 „ .. | 8 | 8 | 3 |
| ½ Moidore | 13 | 5 | 2 |
| Moidore | 26 | 11 | 1 |
| ½ Joannese | 17 | 11 | 3 |
| Joannese | 36 | 0 | 0 |

## MADEIRA.

32 per cent premium.    4.800 Milreis ⅌ £.

VALUE OF BRITISH COINS IN MILREIS.

| | | MILREIS. | | | MILREIS. |
|---|---|---|---|---|---|
| **Farthings** | 1 | .005 | **Pounds** | 1 | 4.800 |
| | 2 | .010 | | 2 | 9.600 |
| | 3 | 015 | | 3 | 14.400 |
| **Pence** | 1 | .020 | | 4 | 19.200 |
| | 2 | .040 | | 5 | 24.000 |
| | 3 | .060 | | 6 | 28.800 |
| | 4 | .080 | | 7 | 33.600 |
| | 5 | .100 | | 8 | 38.400 |
| | 6 | .120 | | 9 | 43.200 |
| | 7 | .140 | | 10 | 48.000 |
| | 8 | .160 | | 20 | 96.000 |
| | 9 | .180 | | 30 | 144.000 |
| | 10 | .200 | | 40 | 192.000 |
| | 11 | .220 | | 50 | 240.000 |
| **Shillings** | 1 | .240 | | 60 | 288.000 |
| | 2 | .480 | | 70 | 336.000 |
| | 3 | .720 | | 80 | 384.000 |
| | 4 | .960 | | 90 | 432.000 |
| | 5 | 1.200 | | 100 | 480.000 |
| | 6 | 1.440 | | | |
| | 7 | 1.680 | | | |
| | 8 | 1.920 | | | |
| | 9 | 2.160 | | | |
| | 10 | 2.400 | | | |
| | 11 | 2.640 | | | |
| | 12 | 2.880 | | | |
| | 13 | 3.120 | | | |
| | 14 | 3.360 | | | |
| | 15 | 3.600 | | | |
| | 16 | 3.840 | | | |
| | 17 | 4.080 | | | |
| | 18 | 4.320 | | | |
| | 19 | 4.560 | | | |

MADEIRA COINS.

1000 Reis—1 Milreis
1 Milreis £.208333333
1 Reis .000208
1 Million M. £208333 6 8

| | S. | D. | F. |
|---|---|---|---|
| Silver, ½ Testoon | — | 2 | 2 |
| Testoon | — | 5 | 0 |
| Peseta | — | 10 | 0 |
| ½ Dollar | 2 | 1 | 0 |
| Dollar | 4 | 2 | 0 |

Gold, Spanish
Doubloon, 16 $.
American Eagles
British Sovereigns, &c.

## UNITED STATES

50 pence ⅌ Dollar, or 108 ⅌ Cent. } 4.80 Dollars ⅌ £.

VALUE OF BRITISH COINS IN DOLLARS.

| | | DOLLARS. | | | DOLLARS |
|---|---|---|---|---|---|
| **Farthings** | 1 | .01 | **Pounds** | 1 | 4.80 |
| | 2 | .01 | | 2 | 9.60 |
| | 3 | .02 | | 3 | 14.40 |
| **Pence** | 1 | .02 | | 4 | 19.20 |
| | 2 | .04 | | 5 | 24.00 |
| | 3 | .06 | | 6 | 28.80 |
| | 4 | .08 | | 7 | 33.60 |
| | 5 | .10 | | 8 | 38.40 |
| | 6 | .12 | | 9 | 43.20 |
| | 7 | .14 | | 10 | 48.00 |
| | 8 | .16 | | 20 | 96.00 |
| | 9 | .18 | | 30 | 144.00 |
| | 10 | .20 | | 40 | 192.00 |
| | 11 | .22 | | 50 | 240.00 |
| **Shillings** | 1 | .24 | | 60 | 288.00 |
| | 2 | .48 | | 70 | 336.00 |
| | 3 | .72 | | 80 | 384.00 |
| | 4 | .96 | | 90 | 432.00 |
| | 5 | 1.20 | | 100 | 480.00 |
| | 6 | 1.44 | | | |
| | 7 | 1.68 | | | |
| | 8 | 1.92 | | | |
| | 9 | 2.16 | | | |
| | 10 | 2.40 | | | |
| | 11 | 2.64 | | | |
| | 12 | 2.88 | | | |
| | 13 | 3.12 | | | |
| | 14 | 3.36 | | | |
| | 15 | 3.60 | | | |
| | 16 | 3.84 | | | |
| | 17 | 4.08 | | | |
| | 18 | 4.32 | | | |
| | 19 | 4.56 | | | |

AMERICAN COINS.

100 Cents—1 Dollar.
1 Dollar £.208333333
1 Cent .00208
1 Million D. £208,333 6 8

| | S. | D. | F. |
|---|---|---|---|
| Silver, 5 Cents | — | 2 | 3 |
| 10 „ | — | 5 | 3 |
| ¼ Dollar | 1 | 0 | 3 |
| ½ „ | 2 | 1 | 3 |
| Dollar 1798 | 4 | 4 | 1 |
| „ 1802 | 4 | 3 | 2 |
| Gold, ¼ Eagle 2½D. | 10 | 10 | 2 |
| ½ „ 5 „ | 21 | 9 | 1 |
| Eagle 10 „ | 43 | 6 | 2 |

## CHINA.

80 pence ⅌ Tael. 3 Taels ⅌ £.

VALUE OF BRITISH COINS IN CHINESE MONEY.

| | | T. | M. | C. | C. | | | T. | M. | C. | C. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Farthings** | 1 | - | - | - | 3 | **Pounds** | 1 | 3 | 0 | 0 | 0 |
| | 2 | - | - | - | 6 | | 2 | 6 | 0 | 0 | 0 |
| | 3 | - | - | - | 9 | | 3 | 9 | 0 | 0 | 0 |
| **Pence** | 1 | - | - | 1 | 3 | | 4 | 12 | 0 | 0 | 0 |
| | 2 | - | - | 2 | 5 | | 5 | 15 | 0 | 0 | 0 |
| | 3 | - | - | 3 | 8 | | 6 | 18 | 0 | 0 | 0 |
| | 4 | - | - | 5 | 0 | | 7 | 21 | 0 | 0 | 0 |
| | 5 | - | - | 6 | 3 | | 8 | 24 | 0 | 0 | 0 |
| | 6 | - | - | 7 | 5 | | 9 | 27 | 0 | 0 | 0 |
| | 7 | - | - | 8 | 8 | | 10 | 30 | 0 | 0 | 0 |
| | 8 | - | 1 | 0 | 0 | | 20 | 60 | 0 | 0 | 0 |
| | 9 | - | 1 | 1 | 3 | | 30 | 90 | 0 | 0 | 0 |
| | 10 | - | 1 | 2 | 5 | | 40 | 120 | 0 | 0 | 0 |
| | 11 | - | 1 | 3 | 8 | | 50 | 150 | 0 | 0 | 0 |
| **Shillings** | 1 | - | 1 | 5 | 0 | | 60 | 180 | 0 | 0 | 0 |
| | 2 | - | 3 | 0 | 0 | | 70 | 210 | 0 | 0 | 0 |
| | 3 | - | 4 | 5 | 0 | | 80 | 240 | 0 | 0 | 0 |
| | 4 | - | 6 | 0 | 0 | | 90 | 270 | 0 | 0 | 0 |
| | 5 | - | 7 | 5 | 0 | | 100 | 300 | 0 | 0 | 0 |
| | 6 | - | 9 | 0 | 0 | | | | | | |
| | 7 | 1 | 0 | 5 | 0 | | | | | | |
| | 8 | 1 | 2 | 0 | 0 | | | | | | |
| | 9 | 1 | 3 | 5 | 0 | | | | | | |
| | 10 | 1 | 5 | 0 | 0 | | | | | | |
| | 11 | 1 | 6 | 5 | 0 | | | | | | |
| | 12 | 1 | 8 | 0 | 0 | | | | | | |
| | 13 | 1 | 9 | 5 | 0 | | | | | | |
| | 14 | 2 | 1 | 0 | 0 | | | | | | |
| | 15 | 2 | 2 | 5 | 0 | | | | | | |
| | 16 | 2 | 4 | 0 | 0 | | | | | | |
| | 17 | 2 | 5 | 5 | 0 | | | | | | |
| | 18 | 2 | 7 | 0 | 0 | | | | | | |
| | 19 | 2 | 8 | 5 | 0 | | | | | | |

CHINESE COINS.

10 Cash—1 Candereen.
10 Candereens—1 Mace.
10 Mace—1 Tael.
1 Tael £.333333333
1 Mace .03333
1 Candereen .0333
1 Cash .00033
1 Million T. £333,333 6 8

The Chinese have no Gold or Silver Coins. The coin called cash is a spurious kind of copper in the form of a farthing with a square hole in the centre, by which 100 or more are strung together

## TURKEY.

110 Piastres ⅌ £. 2¼ pence ⅌ Piastre·

VALUE OF BRITISH COINS IN TURKISH MONEY.

| | | PI. | PA. | A. |
|---|---|---|---|---|
| **Farthings** | 1 | - | 4 | 2 |
| | 2 | - | 9 | 1 |
| | 3 | - | 13 | 2 |
| **Pence** | 1 | - | 18 | 1 |
| | 2 | - | 36 | 2 |
| | 3 | 1 | 15 | 0 |
| | 4 | 1 | 33 | 1 |
| | 5 | 2 | 11 | 2 |
| | 6 | 2 | 30 | 0 |
| | 7 | 3 | 8 | 1 |
| | 8 | 3 | 26 | 2 |
| | 9 | 4 | 5 | 0 |
| | 10 | 4 | 23 | 1 |
| | 11 | 5 | 1 | 2 |
| **Shillings** | 1 | 5 | 20 | 0 |
| | 2 | 11 | 0 | 0 |
| | 3 | 16 | 20 | 0 |
| | 4 | 22 | 0 | 0 |
| | 5 | 27 | 20 | 0 |
| | 6 | 33 | 0 | 0 |
| | 7 | 38 | 20 | 0 |
| | 8 | 44 | 0 | 0 |
| | 9 | 49 | 20 | 0 |
| | 10 | 55 | 0 | 0 |
| | 11 | 60 | 20 | 0 |
| | 12 | 66 | 0 | 0 |
| | 13 | 71 | 20 | 0 |
| | 14 | 77 | 0 | 0 |
| | 15 | 82 | 20 | 0 |
| | 16 | 88 | 0 | 0 |
| | 17 | 93 | 20 | 0 |
| | 18 | 99 | 0 | 0 |
| | 19 | 104 | 20 | 0 |

| | | PI. | PA. | A |
|---|---|---|---|---|
| **Pounds** | 1 | 110 | 0 | 0 |
| | 2 | 220 | 0 | 0 |
| | 3 | 330 | 0 | 0 |
| | 4 | 440 | 0 | 0 |
| | 5 | 550 | 0 | 0 |
| | 6 | 660 | 0 | 0 |
| | 7 | 770 | 0 | 0 |
| | 8 | 880 | 0 | 0 |
| | 9 | 990 | 0 | 0 |
| | 10 | 1100 | 0 | 0 |
| | 20 | 2200 | 0 | 0 |
| | 30 | 3300 | 0 | 0 |
| | 40 | 4400 | 0 | 0 |
| | 50 | 5500 | 0 | 0 |
| | 60 | 6600 | 0 | 0 |
| | 70 | 7700 | 0 | 0 |
| | 80 | 8800 | 0 | 0 |
| | 90 | 9900 | 0 | 0 |
| | 100 | 11000 | 0 | 0 |

TURKISH COINS.

3 Aspres—1 Para.
40 Paras—1 Piastre.
1 Piastre, £.009090909
1 Para.. .00022
1 Aspre .00007
1 Million Pi. £9,090 18 2¼

| | S. | D. | F. |
|---|---|---|---|
| Silver 10 Paras | — | 1 | 0 |
| Piastre, 1773 | 1 | 8 | 2 |
| „ 1801 | 1 | 1 | 1 |
| „ 1818 | — | 9 | 2 |
| Gold, Rubich . | 1 | 9 | 0 |
| ½ Misseir 1818 | 2 | 1 | 3 |
| SequinofCairo1789 | 4 | 9 | 1 |
| „ „ 1773 | 5 | 5 | 3 |
| .. Fonduell | 7 | 7 | 0 |

## EGYPT. (Alexandria and Cairo.)

96 Piastres ⅌ £. 2½ pence ⅌ Piastre.

VALUE OF BRITISH COINS IN TURKISH MONEY.

| | | PI. | PA. | A. |
|---|---|---|---|---|
| **Farthings** | 1 | - | 4 | 0 |
| | 2 | - | 8 | 0 |
| | 3 | - | 12 | 0 |
| **Pence** | 1 | - | 16 | 0 |
| | 2 | - | 32 | 0 |
| | 3 | 1 | 8 | 0 |
| | 4 | 1 | 24 | 0 |
| | 5 | 2 | 0 | 0 |
| | 6 | 2 | 16 | 0 |
| | 7 | 2 | 32 | 0 |
| | 8 | 3 | 8 | 0 |
| | 9 | 3 | 24 | 0 |
| | 10 | 4 | 0 | 0 |
| | 11 | 4 | 16 | 0 |
| **Shillings** | 1 | 4 | 32 | 0 |
| | 2 | 9 | 24 | 0 |
| | 3 | 14 | 16 | 0 |
| | 4 | 19 | 8 | 0 |
| | 5 | 24 | 0 | 0 |
| | 6 | 28 | 32 | 0 |
| | 7 | 33 | 24 | 0 |
| | 8 | 38 | 16 | 0 |
| | 9 | 43 | 8 | 0 |
| | 10 | 48 | 0 | 0 |
| | 11 | 52 | 32 | 0 |
| | 12 | 57 | 24 | 0 |
| | 13 | 62 | 16 | 0 |
| | 14 | 67 | 8 | 0 |
| | 15 | 72 | 0 | 0 |
| | 16 | 76 | 32 | 0 |
| | 17 | 81 | 24 | 0 |
| | 18 | 86 | 16 | 0 |
| | 19 | 01 | 8 | 0 |

| | | PI. | PA. | A. |
|---|---|---|---|---|
| **Pounds** | 1 | 96 | 0 | 0 |
| | 2 | 192 | 0 | 0 |
| | 3 | 288 | 0 | 0 |
| | 4 | 384 | 0 | 0 |
| | 5 | 480 | 0 | 0 |
| | 6 | 576 | 0 | 0 |
| | 7 | 672 | 0 | 0 |
| | 8 | 768 | 0 | 0 |
| | 9 | 864 | 0 | 0 |
| | 10 | 960 | 0 | 0 |
| | 20 | 1920 | 0 | 0 |
| | 30 | 2880 | 0 | 0 |
| | 40 | 3840 | 0 | 0 |
| | 50 | 4800 | 0 | 0 |
| | 60 | 5760 | 0 | 0 |
| | 70 | 6720 | 0 | 0 |
| | 80 | 7680 | 0 | 0 |
| | 90 | 8640 | 0 | 0 |
| | 100 | 9600 | 0 | 0 |

EGYPTIAN COINS

the same as the Turkish
1 Piastre £.010416667
1 Para .00026
1 Aspre .00008
1 Million P. £10,416 13 4

In April 1836, the Egyptian Government fixed the value of the following coins, viz.

| | PI. | PA. |
|---|---|---|
| British Sovereign | 97 | 20 |
| Dutch Ducat | 45 | 26 |
| French 5 Franc | 19 | 10 |
| 20 „ | 77 | 6 |
| Spanish Dollar | 20 | 28 |
| „ Doubloon | 313 | 29 |

## MALTA.

20 pence ⅌ Scudo. 12 Scudi ⅌ £.

VALUE OF BRITISH COINS IN MALTESE MONEY.

| | | S. | T. | G. |
|---|---|---|---|---|
| **Farthings** | 1 | - | - | 3 |
| | 2 | - | - | 6 |
| | 3 | - | - | 9 |
| **Pence** | 1 | - | - | 12 |
| | 2 | - | 1 | 4 |
| | 3 | - | 1 | 16 |
| | 4 | - | 2 | 8 |
| | 5 | - | 3 | 0 |
| | 6 | - | 3 | 12 |
| | 7 | - | 4 | 4 |
| | 8 | - | 4 | 16 |
| | 9 | - | 5 | 8 |
| | 10 | - | 6 | 0 |
| | 11 | - | 6 | 12 |
| **Shillings** | 1 | - | 7 | 4 |
| | 2 | 1 | 2 | 8 |
| | 3 | 1 | 9 | 12 |
| | 4 | 2 | 4 | 16 |
| | 5 | 3 | 0 | 0 |
| | 6 | 3 | 7 | 4 |
| | 7 | 4 | 2 | 8 |
| | 8 | 4 | 9 | 12 |
| | 9 | 5 | 4 | 16 |
| | 10 | 6 | 0 | 0 |
| | 11 | 6 | 7 | 4 |
| | 12 | 7 | 2 | 8 |
| | 13 | 7 | 9 | 12 |
| | 14 | 8 | 4 | 16 |
| | 15 | 9 | 0 | 0 |
| | 16 | 9 | 7 | 4 |
| | 17 | 10 | 2 | 8 |
| | 18 | 10 | 9 | 12 |
| | 19 | 11 | 4 | 16 |

| | | S. | T. | G. |
|---|---|---|---|---|
| **Pounds** | 1 | 12 | 0 | 0 |
| | 2 | 24 | 0 | 0 |
| | 3 | 36 | 0 | 0 |
| | 4 | 48 | 0 | 0 |
| | 5 | 60 | 0 | 0 |
| | 6 | 72 | 0 | 0 |
| | 7 | 84 | 0 | 0 |
| | 8 | 96 | 0 | 0 |
| | 9 | 108 | 0 | 0 |
| | 10 | 120 | 0 | 0 |
| | 20 | 240 | 0 | 0 |
| | 30 | 360 | 0 | 0 |
| | 40 | 480 | 0 | 0 |
| | 50 | 600 | 0 | 0 |
| | 60 | 720 | 0 | 0 |
| | 70 | 840 | 0 | 0 |
| | 80 | 960 | 0 | 0 |
| | 90 | 1080 | 0 | 0 |
| | 100 | 1200 | 0 | 0 |

MALTESE COINS.

20 Grani—1 Tari
12 Tari—1 Scudo
1 Scudo £ 0·83333333
1 Tari .00694
1 Grani .00034
1 Million S. £83,333 6 8

| | S. | D. | F. |
|---|---|---|---|
| Silver. 2 Tari | — | 2 | 2 |
| Scudo........ | 1 | 7 | 1 |
| Oncia........ | 3 | 11 | 1 |
| „ Emmanuel | 4 | 5 | 0 |
| „ Ferdinand | 4 | 5 | 1 |
| Gold, Louis | 19 | 1 | 1 |
| Double Louis | 38 | 1 | 1 |

## EAST INDIES. (Calcutta, Bombay & Madras.)

24 pence ⅌ Rupee. 10 Rupees ⅌ £.

VALUE OF BRITISH COINS IN EAST INDIA MONEY.

| | | R. | A. | P. |
|---|---|---|---|---|
| **Farthings** | 1 | - | - | 2 |
| | 2 | - | - | 4 |
| | 3 | - | - | 6 |
| **Pence** | 1 | - | - | 8 |
| | 2 | - | 1 | 4 |
| | 3 | - | 2 | 0 |
| | 4 | - | 2 | 8 |
| | 5 | - | 3 | 4 |
| | 6 | - | 4 | 0 |
| | 7 | - | 4 | 8 |
| | 8 | - | 5 | 4 |
| | 9 | - | 6 | 0 |
| | 10 | - | 6 | 8 |
| | 11 | - | 7 | 4 |
| **Shillings** | 1 | - | 8 | 0 |
| | 2 | 1 | 0 | 0 |
| | 3 | 1 | 8 | 0 |
| | 4 | 2 | 0 | 0 |
| | 5 | 2 | 8 | 0 |
| | 6 | 3 | 0 | 0 |
| | 7 | 3 | 8 | 0 |
| | 8 | 4 | 0 | 0 |
| | 9 | 4 | 8 | 0 |
| | 10 | 5 | 0 | 0 |
| | 11 | 5 | 8 | 0 |
| | 12 | 6 | 0 | 0 |
| | 13 | 6 | 8 | 0 |
| | 14 | 7 | 0 | 0 |
| | 15 | 7 | 8 | 0 |
| | 16 | 8 | 0 | 0 |
| | 17 | 8 | 8 | 0 |
| | 18 | 9 | 0 | 0 |
| | 19 | 9 | 8 | 0 |

| | | R. | A. | P. |
|---|---|---|---|---|
| **Pounds** | 1 | 10 | 0 | 0 |
| | 2 | 20 | 0 | 0 |
| | 3 | 30 | 0 | 0 |
| | 4 | 40 | 0 | 0 |
| | 5 | 50 | 0 | 0 |
| | 6 | 60 | 0 | 0 |
| | 7 | 70 | 0 | 0 |
| | 8 | 80 | 0 | 0 |
| | 9 | 90 | 0 | 0 |
| | 10 | 100 | 0 | 0 |
| | 20 | 200 | 0 | 0 |
| | 30 | 300 | 0 | 0 |
| | 40 | 400 | 0 | 0 |
| | 50 | 500 | 0 | 0 |
| | 60 | 600 | 0 | 0 |
| | 70 | 700 | 0 | 0 |
| | 80 | 800 | 0 | 0 |
| | 90 | 900 | 0 | 0 |
| | 100 | 1000 | 0 | 0 |

EAST INDIA COINS.

12 Pice—1 Anna.
16 Annas—1 Rupee.
1 Rupee £ 100000000
1 Anna 00625
1 Pice .00052
1 Million R. £100,000 0 0

| | S. | D. | F. |
|---|---|---|---|
| Silver, ¼ Rupee | — | 5 | 2 |
| ½ „ | — | 11 | 1 |
| 1 „ | 1 | 10 | 2 |
| 2 „ | 3 | 9 | 0 |
| Gold, 5 „ | 9 | 8 | 3 |
| 10 „ | 19 | 5 | 2 |
| Mohur | 29 | 2 | 2 |
| Double „ | 58 | 4 | 3 |
| Pagoda Star | 7 | 4 | 3 |

## AUSTRIA, BAVARIA, TRIESTE, & ST. GALLEN

10 Florins ⅌ £. 24 Pence ⅌ Florin.

VALUE OF BRITISH COINS IN AUSTRIAN MONEY.

| | | F. | K. | P. | | | F. | K. | P. |
|---|---|---|---|---|---|---|---|---|---|
| **Farthings** | 1 | - | - | 3 | **Pounds** | 1 | 10 | 0 | 0 |
| | 2 | - | 1 | 1 | | 2 | 20 | 0 | 0 |
| | 3 | - | 2 | 0 | | 3 | 30 | 0 | 0 |
| **Pence** | 1 | - | 2 | 2 | | 4 | 40 | 0 | 0 |
| | 2 | - | 5 | 0 | | 5 | 50 | 0 | 0 |
| | 3 | - | 7 | 2 | | 6 | 60 | 0 | 0 |
| | 4 | - | 10 | 0 | | 7 | 70 | 0 | 0 |
| | 5 | - | 12 | 2 | | 8 | 80 | 0 | 0 |
| | 6 | - | 15 | 0 | | 9 | 90 | 0 | 0 |
| | 7 | - | 17 | 2 | | 10 | 100 | 0 | 0 |
| | 8 | - | 20 | 0 | | 20 | 200 | 0 | 0 |
| | 9 | - | 22 | 2 | | 30 | 300 | 0 | 0 |
| | 10 | - | 25 | 0 | | 40 | 400 | 0 | 0 |
| | 11 | - | 27 | 2 | | 50 | 500 | 0 | 0 |
| **Shillings** | 1 | - | 30 | 0 | | 60 | 600 | 0 | 0 |
| | 2 | 1 | 0 | 0 | | 70 | 700 | 0 | 0 |
| | 3 | 1 | 30 | 0 | | 80 | 800 | 0 | 0 |
| | 4 | 2 | 0 | 0 | | 90 | 900 | 0 | 0 |
| | 5 | 2 | 30 | 0 | | 100 | 1000 | 0 | 0 |
| | 6 | 3 | 0 | 0 | | | | | |
| | 7 | 3 | 30 | 0 | | | | | |
| | 8 | 4 | 0 | 0 | | | | | |
| | 9 | 4 | 30 | 0 | | | | | |
| | 10 | 5 | 0 | 0 | | | | | |
| | 11 | 5 | 30 | 0 | | | | | |
| | 12 | 6 | 0 | 0 | | | | | |
| | 13 | 6 | 30 | 0 | | | | | |
| | 14 | 7 | 0 | 0 | | | | | |
| | 15 | 7 | 30 | 0 | | | | | |
| | 16 | 8 | 0 | 0 | | | | | |
| | 17 | 8 | 30 | 0 | | | | | |
| | 18 | 9 | 0 | 0 | | | | | |
| | 19 | 9 | 30 | 0 | | | | | |

AUSTRIAN COINS.

4 Pfennings, 1 Kreuzer.
60 Kreuzers, 1 Florin.
1 Florin, £.100000000
1 Kr. .00166
1 Pf. .00041
1 Million F. £100,000 0 0

| | S. | D. | F. |
|---|---|---|---|
| Silver, 5 Kr... | — | 2 | 0 |
| 10 ,, .. | — | 4 | 0 |
| 20 ,, .. | — | 8 | 2 |
| Florin, Convention . | 2 | 1 | 0 |
| R. Dollar, 1800 .... | 4 | 1 | 3 |
| Gold, Ducat.. | 9 | 5 | 0 |
| Souverain . | 13 | 11 | 0 |

## FRANKFORT-ON-THE-MAINE.

120 Florins ⅌ £10. 20 Pence ⅌ Florin.

VALUE OF BRITISH COINS IN FRANKFORT MONEY.

| | | F. | K. | P. | | | F. | K. | P. |
|---|---|---|---|---|---|---|---|---|---|
| **Farthings** | 1 | - | - | 3 | **Pounds** | 1 | 12 | 0 | 0 |
| | 2 | - | 1 | 2 | | 2 | 24 | 0 | 0 |
| | 3 | - | 2 | 1 | | 3 | 36 | 0 | 0 |
| **Pence** | 1 | - | 3 | 0 | | 4 | 48 | 0 | 0 |
| | 2 | - | 6 | 0 | | 5 | 60 | 0 | 0 |
| | 3 | - | 9 | 0 | | 6 | 72 | 0 | 0 |
| | 4 | - | 12 | 0 | | 7 | 84 | 0 | 0 |
| | 5 | - | 15 | 0 | | 8 | 96 | 0 | 0 |
| | 6 | - | 18 | 0 | | 9 | 108 | 0 | 0 |
| | 7 | - | 21 | 0 | | 10 | 120 | 0 | 0 |
| | 8 | - | 24 | 0 | | 20 | 240 | 0 | 0 |
| | 9 | - | 27 | 0 | | 30 | 360 | 0 | 0 |
| | 10 | - | 30 | 0 | | 40 | 480 | 0 | 0 |
| | 11 | - | 33 | 0 | | 50 | 600 | 0 | 0 |
| **Shillings** | 1 | - | 36 | 0 | | 60 | 720 | 0 | 0 |
| | 2 | 1 | 12 | 0 | | 70 | 840 | 0 | 0 |
| | 3 | 1 | 48 | 0 | | 80 | 960 | 0 | 0 |
| | 4 | 2 | 24 | 0 | | 90 | 1080 | 0 | 0 |
| | 5 | 3 | 0 | 0 | | 100 | 1200 | 0 | 0 |
| | 6 | 3 | 36 | 0 | | | | | |
| | 7 | 4 | 12 | 0 | | | | | |
| | 8 | 4 | 48 | 0 | | | | | |
| | 9 | 5 | 24 | 0 | | | | | |
| | 10 | 6 | 0 | 0 | | | | | |
| | 11 | 6 | 36 | 0 | | | | | |
| | 12 | 7 | 12 | 0 | | | | | |
| | 13 | 7 | 48 | 0 | | | | | |
| | 14 | 8 | 24 | 0 | | | | | |
| | 15 | 9 | 0 | 0 | | | | | |
| | 16 | 9 | 36 | 0 | | | | | |
| | 17 | 10 | 12 | 0 | | | | | |
| | 18 | 10 | 48 | 0 | | | | | |
| | 19 | 11 | 24 | 0 | | | | | |

FRANKFORT COINS.

4 Pfennings, 1 Kreuzer.
60 Kreuzers, 1 Florin.
1 Florin, £.083333333
1 Kr. .00138
1 Pf. .00034
1 Million F. £83,333 6 8

| | S. | D. | F. |
|---|---|---|---|
| Silver, Rix Dollar, 1722.. | 4 | 2 | 3 |
| ,, 1796.. | 4 | 2 | 2 |
| Gold, Ducat.... | 9 | 4 | 1 |

## HAMBURG AND LUBEC.

13½ Marcs Banco ⅌ £. 17¾ Pence ⅌ Marc.

VALUE OF BRITISH COINS IN HAMBURG MONEY.

| | | M. | S. | P. | | | M. | S. | P. |
|---|---|---|---|---|---|---|---|---|---|
| **Farthings** | 1 | - | - | 3 | **Pounds** | 1 | 13 | 8 | 0 |
| | 2 | - | - | 5 | | 2 | 27 | 0 | 0 |
| | 3 | - | - | 8 | | 3 | 40 | 8 | 0 |
| **Pence** | 1 | - | - | 11 | | 4 | 54 | 0 | 0 |
| | 2 | - | 1 | 10 | | 5 | 67 | 8 | 0 |
| | 3 | - | 2 | 8 | | 6 | 81 | 0 | 0 |
| | 4 | - | 3 | 7 | | 7 | 94 | 8 | 0 |
| | 5 | - | 4 | 6 | | 8 | 108 | 0 | 0 |
| | 6 | - | 5 | 5 | | 9 | 121 | 8 | 0 |
| | 7 | - | 6 | 3 | | 10 | 135 | 0 | 0 |
| | 8 | - | 7 | 2 | | 20 | 270 | 0 | 0 |
| | 9 | - | 8 | 1 | | 30 | 405 | 0 | 0 |
| | 10 | - | 9 | 0 | | 40 | 540 | 0 | 0 |
| | 11 | - | 9 | 11 | | 50 | 675 | 0 | 0 |
| **Shillings** | 1 | - | 10 | 10 | | 60 | 810 | 0 | 0 |
| | 2 | 1 | 5 | 7 | | 70 | 945 | 0 | 0 |
| | 3 | 2 | 0 | 5 | | 80 | 1080 | 0 | 0 |
| | 4 | 2 | 11 | 2 | | 90 | 1215 | 0 | 0 |
| | 5 | 3 | 6 | 0 | | 100 | 1350 | 0 | 0 |
| | 6 | 4 | 0 | 10 | | | | | |
| | 7 | 4 | 11 | 7 | | | | | |
| | 8 | 5 | 6 | 5 | | | | | |
| | 9 | 6 | 1 | 2 | | | | | |
| | 10 | 6 | 12 | 0 | | | | | |
| | 11 | 7 | 6 | 10 | | | | | |
| | 12 | 8 | 1 | 7 | | | | | |
| | 13 | 8 | 12 | 5 | | | | | |
| | 14 | 9 | 7 | 2 | | | | | |
| | 15 | 10 | 2 | 0 | | | | | |
| | 16 | 10 | 12 | 10 | | | | | |
| | 17 | 11 | 7 | 7 | | | | | |
| | 18 | 12 | 2 | 5 | | | | | |
| | 19 | 12 | 13 | 2 | | | | | |

HAMBURG COINS.

12 Pfennings, 1 Schel.
16 Schellings, 1 Marc.
1 Marc .. £.074074074
1 Sch. .. .00462
1 Pfen. .. .00038
1 Million M. £74,074 1 5¾

| | S. | D. | F. |
|---|---|---|---|
| Silver, ¼ Marc | — | 4 | 0 |
| ½ ,, | — | 7 | 0 |
| 2 ,, | 2 | 5 | 1 |
| Rix Dollar | 4 | 7 | 2 |
| Gold, Ducat.. | 9 | 4 | 1 |
| Double do. | 18 | 8 | 2 |

## PRUSSIA AND SAXONY.

6 Thalers
27¼ Silver Gro. } ⅌ £. 34¾ pence ⅌ Thaler.

VALUE OF BRITISH COINS IN PRUSSIAN MONEY.

| | | T. | G. | P. | | | T. | G. | P. |
|---|---|---|---|---|---|---|---|---|---|
| **Farthings** | 1 | - | - | 3 | **Pounds** | 1 | 6 | 27 | 3 |
| | 2 | - | - | 5 | | 2 | 13 | 24 | 6 |
| | 3 | - | - | 8 | | 3 | 20 | 21 | 9 |
| **Pence** | 1 | - | - | 10 | | 4 | 27 | 19 | 0 |
| | 2 | - | 1 | 9 | | 5 | 34 | 16 | 3 |
| | 3 | - | 2 | 7 | | 6 | 41 | 13 | 6 |
| | 4 | - | 3 | 5 | | 7 | 48 | 10 | 9 |
| | 5 | - | 4 | 4 | | 8 | 55 | 8 | 0 |
| | 6 | - | 5 | 2 | | 9 | 62 | 5 | 3 |
| | 7 | - | 6 | 1 | | 10 | 69 | 2 | 6 |
| | 8 | - | 6 | 11 | | 20 | 138 | 5 | 0 |
| | 9 | - | 7 | 9 | | 30 | 207 | 7 | 6 |
| | 10 | - | 8 | 8 | | 40 | 276 | 10 | 0 |
| | 11 | - | 9 | 6 | | 50 | 345 | 12 | 6 |
| **Shillings** | 1 | - | 10 | 4 | | 60 | 414 | 15 | 0 |
| | 2 | - | 20 | 9 | | 70 | 483 | 17 | 6 |
| | 3 | 1 | 1 | 1 | | 80 | 552 | 20 | 0 |
| | 4 | 1 | 11 | 5 | | 90 | 621 | 22 | 6 |
| | 5 | 1 | 21 | 10 | | 100 | 690 | 25 | 0 |
| | 6 | 2 | 2 | 2 | | | | | |
| | 7 | 2 | 12 | 6 | | | | | |
| | 8 | 2 | 22 | 11 | | | | | |
| | 9 | 3 | 3 | 3 | | | | | |
| | 10 | 3 | 13 | 7 | | | | | |
| | 11 | 3 | 24 | 0 | | | | | |
| | 12 | 4 | 4 | 4 | | | | | |
| | 13 | 4 | 14 | 9 | | | | | |
| | 14 | 4 | 25 | 1 | | | | | |
| | 15 | 5 | 5 | 5 | | | | | |
| | 16 | 5 | 15 | 10 | | | | | |
| | 17 | 5 | 26 | 2 | | | | | |
| | 18 | 6 | 6 | 6 | | | | | |
| | 19 | 6 | 16 | 11 | | | | | |

PRUSSIAN COINS.

12 Pfennings, 1 Grosch.
30 Silver Gr. 1 Thaler.
1 Th. £·144752714
1 G. ·00482
1 P. ·00040
1 Million T. £144,752 14 3½

| | S. | D. | F. |
|---|---|---|---|
| Silver 4 Gr.. | — | 5 | 3 |
| 6 ,, .. | — | 8 | 3 |
| 8 ,, .. | 1 | 0 | 0 |
| Florins of Silesia | 1 | 11 | 3 |
| R.Dol. of Anspach | 2 | 11 | 0 |
| Gold, Ducat. 1787 | 9 | 3 | 3 |
| Frederick 1800 | 16 | 3 | 3 |

## BREMEN.

610 Rix Dollars ℘ £100. 39½ Pence ℘ R. Dollar.

VALUE OF BRITISH COINS IN BREMEN MONEY.

| | | R.D. | G. | S. | | | R.D | G. | S. |
|---|---|---|---|---|---|---|---|---|---|
| **Farthings** | 1 | - | - | 2 | **Pounds** | 1 | 6 | 7 | 1 |
| | 2 | - | 1 | 0 | | 2 | 12 | 14 | 2 |
| | 3 | - | 1 | 2 | | 3 | 18 | 21 | 3 |
| **Pence** | 1 | - | 1 | 4 | | 4 | 24 | 28 | 4 |
| | 2 | - | 3 | 3 | | 5 | 30 | 36 | 0 |
| | 3 | - | 5 | 2 | | 6 | 36 | 43 | 1 |
| | 4 | - | 7 | 2 | | 7 | 42 | 50 | 2 |
| | 5 | - | 9 | 1 | | 8 | 48 | 57 | 3 |
| | 6 | - | 11 | 0 | | 9 | 54 | 64 | 4 |
| | 7 | - | 12 | 4 | | 10 | 61 | 0 | 0 |
| | 8 | - | 14 | 3 | | 20 | 122 | 0 | 0 |
| | 9 | - | 16 | 2 | | 30 | 183 | 0 | 0 |
| | 10 | - | 18 | 2 | | 40 | 244 | 0 | 0 |
| | 11 | - | 20 | 1 | | 50 | 305 | 0 | 0 |
| **Shillings** | 1 | - | 22 | 0 | | 60 | 366 | 0 | 0 |
| | 2 | - | 44 | 0 | | 70 | 427 | 0 | 0 |
| | 3 | - | 65 | 4 | | 80 | 488 | 0 | 0 |
| | 4 | 1 | 15 | 4 | | 90 | 549 | 0 | 0 |
| | 5 | 1 | 37 | 4 | | 100 | 610 | 0 | 0 |
| | 6 | 1 | 59 | 4 | | | | | |
| | 7 | 2 | 9 | 4 | | | | | |
| | 8 | 2 | 31 | 3 | | | | | |
| | 9 | 2 | 53 | 3 | | | | | |
| | 10 | 3 | 3 | 3 | | | | | |
| | 11 | 3 | 25 | 3 | | | | | |
| | 12 | 3 | 47 | 3 | | | | | |
| | 13 | 3 | 69 | 2 | | | | | |
| | 14 | 4 | 19 | 2 | | | | | |
| | 15 | 4 | 41 | 2 | | | | | |
| | 16 | 4 | 63 | 2 | | | | | |
| | 17 | 5 | 13 | 2 | | | | | |
| | 18 | 5 | 35 | 1 | | | | | |
| | 19 | 5 | 57 | 1 | | | | | |

BREMEN COINS.

5 Schwarens, 1 Grote.
72 Grotes, 1 R. Dollar.
1 R. D. £.163934426
1 Grote .00227
1 Schw. .00045
1 Million Rix Dollars,
£163,934 8 6½

| | S. | D. | F. |
|---|---|---|---|
| Silver, 48 Grotes | 2 | 3 | 3 |

## SWEDEN.

12 Riksdalers Bco. ℘ £. 20 pence ℘ Riksdal.

VALUE OF BRITISH COINS IN SWEDISH MONEY.

| | | RD. | S. | P. | | | Rs. | S. | P. |
|---|---|---|---|---|---|---|---|---|---|
| **Farthings** | 1 | - | - | 7 | **Pounds** | 1 | 12 | 0 | 0 |
| | 2 | - | 1 | 2 | | 2 | 24 | 0 | 0 |
| | 3 | - | 1 | 10 | | 3 | 36 | 0 | 0 |
| **Pence** | 1 | - | 2 | 5 | | 4 | 48 | 0 | 0 |
| | 2 | - | 4 | 10 | | 5 | 60 | [illegible] | 0 |
| | 3 | - | 7 | 2 | | 6 | 72 | 0 | 0 |
| | 4 | - | 9 | 7 | | 7 | 84 | 0 | 0 |
| | 5 | - | 12 | 0 | | 8 | 96 | 0 | 0 |
| | 6 | - | 14 | 5 | | 9 | 108 | 0 | 0 |
| | 7 | - | 16 | 10 | | 10 | 120 | 0 | 0 |
| | 8 | - | 19 | 2 | | 20 | 240 | 0 | 0 |
| | 9 | - | 21 | 7 | | 30 | 360 | 0 | 0 |
| | 10 | - | 24 | 0 | | 40 | 480 | 0 | 0 |
| | 11 | - | 26 | 5 | | 50 | 600 | 0 | 0 |
| **Shillings** | 1 | - | 28 | 10 | | 60 | 720 | 0 | 0 |
| | 2 | 1 | 9 | 7 | | 70 | 840 | 0 | 0 |
| | 3 | 1 | 38 | 5 | | 80 | 960 | 0 | 0 |
| | 4 | 2 | 19 | 2 | | 90 | 1080 | 0 | 0 |
| | 5 | 3 | 0 | 0 | | 100 | 1200 | 0 | 0 |
| | 6 | 3 | 28 | 10 | | | | | |
| | 7 | 4 | 9 | 7 | | | | | |
| | 8 | 4 | 38 | 5 | | | | | |
| | 9 | 5 | 19 | 2 | | | | | |
| | 10 | 6 | 0 | 0 | | | | | |
| | 11 | 6 | 28 | 10 | | | | | |
| | 12 | 7 | 9 | 7 | | | | | |
| | 13 | 7 | 38 | 5 | | | | | |
| | 14 | 8 | 19 | 2 | | | | | |
| | 15 | 9 | 0 | 0 | | | | | |
| | 16 | 9 | 28 | 10 | | | | | |
| | 17 | 10 | 9 | 7 | | | | | |
| | 18 | 10 | 38 | 5 | | | | | |
| | 19 | 11 | 19 | 2 | | | | | |

SWEDISH COINS.

12 Pfennings, 1 Sch.
48 Schellings. 1 Riksda.
1 R. D. £.083333333
1 Sch. .00173
1 Pf. .00014
1 Million R.D. £83333 6 8

| | S. | D. | F. |
|---|---|---|---|
| Silver. 4 Schel. | — | 5 | 0 |
| 8 ,, | — | 9 | 0 |
| Single Plott | 1 | 6 | 0 |
| Double ,, | 3 | 0 | 1 |
| R. Dollar, 1762 | 4 | 7 | 1. |
| ,, late Coinage | 4 | 6 | 1 |
| Gold, Ducat | 9 | 2 | 1 |

## DENMARK.

9 Rigsbank Dol. } ℘ £. 26 pence ℘ R. Dol
24 Schellings }

VALUE OF BRITISH COINS IN DANISH MONEY.

| | | R. D. | M | S. | | | R. D. | M. | S. |
|---|---|---|---|---|---|---|---|---|---|
| **Farthings** | 1 | - | - | 1 | **Pounds** | 1 | 9 | 1 | 8 |
| | 2 | - | - | 2 | | 2 | 18 | 3 | 0 |
| | 3 | - | - | 3 | | 3 | 27 | 4 | 8 |
| **Pence** | 1 | - | - | 4 | | 4 | 37 | 0 | 0 |
| | 2 | - | - | 7 | | 5 | 46 | 1 | 8 |
| | 3 | - | - | 11 | | 6 | 55 | 3 | 0 |
| | 4 | - | - | 15 | | 7 | 64 | 4 | 8 |
| | 5 | - | 1 | 3 | | 8 | 74 | 0 | 0 |
| | 6 | - | 1 | 6 | | 9 | 83 | 1 | 8 |
| | 7 | - | 1 | 10 | | 10 | 92 | 3 | 0 |
| | 8 | - | 1 | 14 | | 20 | 185 | 0 | 0 |
| | 9 | - | 2 | 1 | | 30 | 277 | 3 | 0 |
| | 10 | - | 2 | 5 | | 40 | 370 | 0 | 0 |
| | 11 | - | 2 | 9 | | 50 | 462 | 3 | 0 |
| **Shillings** | 1 | - | 2 | 12 | | 60 | 555 | 0 | 0 |
| | 2 | - | 5 | 9 | | 70 | 647 | 3 | 0 |
| | 3 | 1 | 2 | 5 | | 80 | 740 | 0 | 0 |
| | 4 | 1 | 5 | 2 | | 90 | 832 | 3 | 0 |
| | 5 | 2 | 1 | 14 | | 100 | 925 | 0 | 0 |
| | 6 | 2 | 4 | 10 | | | | | |
| | 7 | 3 | 1 | 7 | | | | | |
| | 8 | 3 | 4 | 3 | | | | | |
| | 9 | 4 | 1 | 0 | | | | | |
| | 10 | 4 | 3 | 12 | | | | | |
| | 11 | 5 | 0 | 8 | | | | | |
| | 12 | 5 | 3 | 5 | | | | | |
| | 13 | 6 | 0 | 1 | | | | | |
| | 14 | 6 | 2 | 14 | | | | | |
| | 15 | 6 | 5 | 10 | | | | | |
| | 16 | 7 | 2 | 6 | | | | | |
| | 17 | 7 | 5 | 3 | | | | | |
| | 18 | 8 | 1 | 15 | | | | | |
| | 19 | 8 | 4 | 12 | | | | | |

DANISH COINS.

16 Schellings, 1 Marc.
6 Marcs, 1 R. Dollar.
1 R. Dollar, £.10810810
1 Mc. ·01801
1 Sch. ·00112
1 MillionR D. £108108 2 2

| | S. | D. | F. |
|---|---|---|---|
| Silver, Marc .. | — | 7 | 2 |
| 24 Sch, | — | 9 | 2 |
| Crome .. | 2 | 7 | 2 |
| ,, New | 3 | 0 | 1 |
| Rykadaler, | 4 | 6 | 1 |
| Gold Ducat Cur. | 7 | 5 | 2 |
| ,, Specie | 9 | 3 | 3 |
| Christian d'or | 16 | 6 | 1 |

## DENMARK. (Elsinore.)

56 pence ℘ Specie D. 4 Dollars } ℘ £.
14 Schellings }

VALUE OF BRITISH COINS IN DANISH MONEY.

| | | SD. | S. | | | SD. | S. |
|---|---|---|---|---|---|---|---|
| **Farthings** | 1 | - | - | **Pounds** | 1 | 4 | 14 |
| | 2 | - | - | | 2 | 8 | 27 |
| | 3 | - | 1 | | 3 | 12 | 41 |
| **Pence** | 1 | - | 1 | | 4 | 17 | 7 |
| | 2 | - | 2 | | 5 | 21 | 21 |
| | 3 | - | 3 | | 6 | 25 | 34 |
| | 4 | - | 3 | | 7 | 30 | 0 |
| | 5 | - | 4 | | 8 | 34 | 14 |
| | 6 | - | 5 | | 9 | 38 | 27 |
| | 7 | - | 6 | | 10 | 42 | 41 |
| | 8 | - | 7 | | 20 | 85 | 34 |
| | 9 | - | 8 | | 30 | 128 | 27 |
| | 10 | - | 9 | | 40 | 171 | 21 |
| | 11 | - | 9 | | 50 | 214 | 14 |
| **Shillings** | 1 | - | 10 | | 60 | 257 | 7 |
| | 2 | - | 21 | | 70 | 300 | 0 |
| | 3 | - | 31 | | 80 | 342 | 41 |
| | 4 | - | 41 | | 90 | 385 | 34 |
| | 5 | 1 | 3 | | 100 | 428 | 27 |
| | 6 | 1 | 14 | | | | |
| | 7 | 1 | 24 | | | | |
| | 8 | 1 | 34 | | | | |
| | 9 | 1 | 45 | | | | |
| | 10 | 2 | 7 | | | | |
| | 11 | 2 | 17 | | | | |
| | 12 | 2 | 27 | | | | |
| | 13 | 2 | 38 | | | | |
| | 14 | 3 | 0 | | | | |
| | 15 | 3 | 10 | | | | |
| | 16 | 3 | 21 | | | | |
| | 17 | 3 | 31 | | | | |
| | 18 | 3 | 41 | | | | |
| | 19 | 4 | 3 | | | | |

DANISH COINS.

48 Sch. 1 Specie Dollar.
1 Specie Dol. £·233333333
1 Schelling ·00486
1 Million D. £233333 6 8

## NORWAY.

4 Specie Dollars } ℔ £. 52¾ Pence ℔ S. D.
66 Schillings }

VALUE OF BRITISH COINS IN NORWEGIAN MONEY.

| | | S.D. | M. | S. | | | S.D. | M. | S. |
|---|---|---|---|---|---|---|---|---|---|
| **Farthings** | 1 | - | - | 1 | **Pounds** | 1 | 4 | 2 | 18 |
| | 2 | - | - | 1 | | 2 | 9 | 0 | 12 |
| | 3 | - | - | 2 | | 3 | 13 | 3 | 6 |
| **Pence** | 1 | - | - | 2 | | 4 | 18 | 1 | 0 |
| | 2 | - | - | 5 | | 5 | 22 | 3 | 18 |
| | 3 | - | - | 7 | | 6 | 27 | 1 | 12 |
| | 4 | - | - | 9 | | 7 | 31 | 4 | 6 |
| | 5 | - | - | 11 | | 8 | 36 | 2 | 0 |
| | 6 | - | - | 14 | | 9 | 40 | 4 | 18 |
| | 7 | - | - | 16 | | 10 | 45 | 2 | 12 |
| | 8 | - | - | 18 | | 20 | 91 | 0 | 0 |
| | 9 | - | - | 20 | | 30 | 136 | 2 | 12 |
| | 10 | - | - | 23 | | 40 | 182 | 0 | 0 |
| | 11 | - | 1 | 1 | | 50 | 227 | 2 | 12 |
| **Shillings** | 1 | - | 1 | 3 | | 60 | 273 | 0 | 0 |
| | 2 | - | 2 | 7 | | 70 | 318 | 2 | 12 |
| | 3 | - | 3 | 10 | | 80 | 364 | 0 | 0 |
| | 4 | - | 4 | 13 | | 90 | 409 | 2 | 12 |
| | 5 | 1 | 0 | 17 | | 100 | 455 | 0 | 0 |
| | 6 | 1 | 1 | 20 | | | | | |
| | 7 | 1 | 2 | 23 | | | | | |
| | 8 | 1 | 4 | 2 | | | | | |
| | 9 | 2 | 0 | 6 | | | | | |
| | 10 | 2 | 1 | 9 | | | | | |
| | 11 | 2 | 2 | 12 | | | | | |
| | 12 | 2 | 3 | 16 | | | | | |
| | 13 | 2 | 4 | 19 | | | | | |
| | 14 | 3 | 0 | 22 | | | | | |
| | 15 | 3 | 2 | 2 | | | | | |
| | 16 | 3 | 3 | 5 | | | | | |
| | 17 | 3 | 4 | 8 | | | | | |
| | 18 | 4 | 0 | 11 | | | | | |
| | 19 | 4 | 1 | 15 | | | | | |

NORWEGIAN COIN.

4 Schillings, 1 Marc.
5 Marcs, 1 Specie Dollar
1 S. Dollar, £.219780220
1 Marc, .04395
1 Schilling, .00183
1 Mil. S. D. £219,780 4 4¾

For coins of circulation see Sweden.

## SICILY. (Palermo and Messina.)

120 pence ℔ Oncia. 2 Oncie, or } ℔ £.
60 Tari. }

VALUE OF BRITISH COINS IN SICILIAN MONEY.

| | | O. | T. | G. | | | O. | T. | G. |
|---|---|---|---|---|---|---|---|---|---|
| **Farthings** | 1 | - | - | 1 | **Pounds** | 1 | 2 | 0 | 0 |
| | 2 | - | - | 3 | | 2 | 4 | 0 | 0 |
| | 3 | - | - | 4 | | 3 | 6 | 0 | 0 |
| **Pence** | 1 | - | - | 5 | | 4 | 8 | 0 | 0 |
| | 2 | - | - | 10 | | 5 | 10 | 0 | 0 |
| | 3 | - | - | 15 | | 6 | 12 | 0 | 0 |
| | 4 | - | 1 | 0 | | 7 | 14 | 0 | 0 |
| | 5 | - | 1 | 5 | | 8 | 16 | 0 | 0 |
| | 6 | - | 1 | 10 | | 9 | 18 | 0 | 0 |
| | 7 | - | 1 | 15 | | 10 | 20 | 0 | 0 |
| | 8 | - | 2 | 0 | | 20 | 40 | 0 | 0 |
| | 9 | - | 2 | 5 | | 30 | 60 | 0 | 0 |
| | 10 | - | 2 | 10 | | 40 | 80 | 0 | 0 |
| | 11 | - | 2 | 15 | | 50 | 100 | 0 | 0 |
| **Shillings** | 1 | - | 3 | 0 | | 60 | 120 | 0 | 0 |
| | 2 | - | 6 | 0 | | 70 | 140 | 0 | 0 |
| | 3 | - | 9 | 0 | | 80 | 160 | 0 | 0 |
| | 4 | - | 12 | 0 | | 90 | 180 | 0 | 0 |
| | 5 | - | 15 | 0 | | 100 | 200 | 0 | 0 |
| | 6 | - | 18 | 0 | | | | | |
| | 7 | - | 21 | 0 | | | | | |
| | 8 | - | 24 | 0 | | | | | |
| | 9 | - | 27 | 0 | | | | | |
| | 10 | 1 | 0 | 0 | | | | | |
| | 11 | 1 | 3 | 0 | | | | | |
| | 12 | 1 | 6 | 0 | | | | | |
| | 13 | 1 | 9 | 0 | | | | | |
| | 14 | 1 | 12 | 0 | | | | | |
| | 15 | 1 | 15 | 0 | | | | | |
| | 16 | 1 | 18 | 0 | | | | | |
| | 17 | 1 | 21 | 0 | | | | | |
| | 18 | 1 | 24 | 0 | | | | | |
| | 19 | 1 | 27 | 0 | | | | | |

SICILIAN COINS.

20 Grani—1 Tari.
30 Tari—1 Oncia.
1 Oncia.. £.500000000
1 Tari.... .01666
1 Grani .. .00083
1 Million Oncie, £500,000 0 0

| | S. | D. | F. |
|---|---|---|---|
| Silver, 20 Grani | — | 8 | 1 |
| 40 ,, . | 1 | 4 | 2 |
| ½ Scudo . | 2 | 0 | 1 |
| Scudo .. | 4 | 0 | 2 |
| Gold, Oncia 1751 | 10 | 3 | 2 |
| Double ,, 1758 . | 20 | 8 | 2 |

## SPAIN.

50 pence ℔ Dollar. 4 Dollars } ℔ £.
16 Reals }

VALUE OF BRITISH COINS IN SPANISH MONEY.

| | | D. | R. | M. | | | D. | R. | M. |
|---|---|---|---|---|---|---|---|---|---|
| **Farthings** | 1 | - | - | 3 | **Pounds** | 1 | 4 | 16 | 0 |
| | 2 | - | - | 7 | | 2 | 9 | 12 | 0 |
| | 3 | - | - | 10 | | 3 | 14 | 8 | 0 |
| **Pence** | 1 | - | - | 14 | | 4 | 19 | 4 | 0 |
| | 2 | - | - | 27 | | 5 | 24 | 0 | 0 |
| | 3 | - | 1 | 7 | | 6 | 28 | 16 | 0 |
| | 4 | - | 1 | 20 | | 7 | 33 | 12 | 0 |
| | 5 | - | 2 | 0 | | 8 | 38 | 8 | 0 |
| | 6 | - | 2 | 14 | | 9 | 43 | 4 | 0 |
| | 7 | - | 2 | 27 | | 10 | 48 | 0 | 0 |
| | 8 | - | 3 | 7 | | 20 | 96 | 0 | 0 |
| | 9 | - | 3 | 20 | | 30 | 144 | 0 | 0 |
| | 10 | - | 4 | 0 | | 40 | 192 | 0 | 0 |
| | 11 | - | 4 | 14 | | 50 | 240 | 0 | 0 |
| **Shillings** | 1 | - | 4 | 27 | | 60 | 288 | 0 | 0 |
| | 2 | - | 9 | 20 | | 70 | 336 | 0 | 0 |
| | 3 | - | 14 | 14 | | 80 | 384 | 0 | 0 |
| | 4 | - | 19 | 7 | | 90 | 432 | 0 | 0 |
| | 5 | 1 | 4 | 0 | | 100 | 480 | 0 | 0 |
| | 6 | 1 | 8 | 27 | | | | | |
| | 7 | 1 | 13 | 20 | | | | | |
| | 8 | 1 | 18 | 14 | | | | | |
| | 9 | 2 | 3 | 7 | | | | | |
| | 10 | 2 | 8 | 0 | | | | | |
| | 11 | 2 | 12 | 27 | | | | | |
| | 12 | 2 | 17 | 20 | | | | | |
| | 13 | 3 | 2 | 14 | | | | | |
| | 14 | 3 | 7 | 7 | | | | | |
| | 15 | 3 | 12 | 0 | | | | | |
| | 16 | 3 | 16 | 27 | | | | | |
| | 17 | 4 | 1 | 20 | | | | | |
| | *18* | 4 | 6 | 14 | | | | | |
| | *19* | 4 | 11 | 7 | | | | | |

SPANISH COINS.

34 Maravedis, 1 Real.
20 Reals Vellon 1 Dol.
1 Dollar £.208333333
1 Real .01041
1 Maravedis .00030
1 Million D. £208333 6 8

| | S. | D. | F. |
|---|---|---|---|
| Silver, Real de Plata, 1795 | — | 5 | 0 |
| Peceta, 2 R. | — | 10 | 0 |
| Dollar .. | 4 | 3 | 3 |
| Gold, Pist. 1801 | 15 | 11 | 1 |
| Double ,, | 31 | 11 | 0 |
| Quadruple ,, | 63 | 9 | 2 |
| *Doubloon* | 65 | 10 | 0 |
| ½ ,, .. | 32 | 11 | 0 |

## GIBRALTAR.

50 pence ℔ Dollar. 4 Dollars }
9 Reals } ℔ £.
10 Quartos }

VALUE OF BRITISH COINS IN GIBRALTAR MONEY.

| | | D. | R. | Q. | | | D. | R. | Q. |
|---|---|---|---|---|---|---|---|---|---|
| **Farthings** | 1 | - | - | 1 | **Pounds** | 1 | 4 | 9 | 10 |
| | 2 | - | - | 2 | | 2 | 9 | 7 | 3 |
| | 3 | - | - | 3 | | 3 | 14 | 4 | 13 |
| **Pence** | 1 | - | - | 4 | | 4 | 19 | 2 | 6 |
| | 2 | - | - | 8 | | 5 | 24 | 0 | 0 |
| | 3 | - | - | 12 | | 6 | 28 | 9 | 10 |
| | 4 | - | - | 15 | | 7 | 33 | 7 | 3 |
| | 5 | - | 1 | 3 | | 8 | 38 | 4 | 13 |
| | 6 | - | 1 | 7 | | 9 | 43 | 2 | 6 |
| | 7 | - | 1 | 11 | | 10 | 48 | 0 | 0 |
| | 8 | - | 1 | 15 | | 20 | 96 | 0 | 0 |
| | 9 | - | 2 | 3 | | 30 | 144 | 0 | 0 |
| | 10 | - | 2 | 6 | | 40 | 192 | 0 | 0 |
| | 11 | - | 2 | 10 | | 50 | 240 | 0 | 0 |
| **Shillings** | 1 | - | 2 | 14 | | 60 | 288 | 0 | 0 |
| | 2 | - | 5 | 12 | | 70 | 336 | 0 | 0 |
| | 3 | - | 8 | 10 | | 80 | 384 | 0 | 0 |
| | 4 | - | 11 | 8 | | 90 | 432 | 0 | 0 |
| | 5 | 1 | 2 | 6 | | 100 | 480 | 0 | 0 |
| | 6 | 1 | 5 | 4 | | | | | |
| | 7 | 1 | 8 | 3 | | | | | |
| | 8 | 1 | 11 | 1 | | | | | |
| | 9 | 2 | 1 | 15 | | | | | |
| | 10 | 2 | 4 | 13 | | | | | |
| | 11 | 2 | 7 | 11 | | | | | |
| | 12 | 2 | 10 | 9 | | | | | |
| | 13 | 3 | 1 | 7 | | | | | |
| | 14 | 3 | 4 | 5 | | | | | |
| | 15 | 3 | 7 | 3 | | | | | |
| | 16 | 3 | 10 | 1 | | | | | |
| | 17 | 4 | 0 | 15 | | | | | |
| | 18 | 4 | 3 | 13 | | | | | |
| | 19 | 4 | 6 | 12 | | | | | |

GIBRALTAR COINS.

16 Quartos, 1 Real
12 Reals, 1 Dollar.
1 Dollar £.208333333
1 Real .01736
1 Quarto .00108
1 Million D. £208333 6 8

The coins of every country are in circulation here, especially the Spanish Dollar, valued at 50 pence, and Doubloon at 16 $.

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